

## POTENTIAL THREATS TO GROUNDWATER SOURCES

Potential Threats to Groundwater Sources (based on MADEP's SWAP Land Use Pollution Potential Matrix)		
Land Uses	Threat	Potential Contaminant Sources
High Risk Threats		
Airports	H	Spills, leaks, or improper handling of fuels, de-icers, salt, and other hazardous chemicals
Boat Yards/Builders	H	Spills, leaks, or improper handling of fuels, paints, and solvents
Body Shops	H	Improper management of vehicle paints, solvents, and primer products
Bus and Truck Terminals	H	Spills, leaks, or improper handling of fuels and maintenance chemicals
Chemical Manufacture Or Storage	H	Spills, leaks, or improper handling or storage of chemicals and process wastes
Clandestine (Mezah) Dumping	H	Debris containing hazardous materials or wastes
Dry Cleaners	H	Spills, leaks, or improper handling of solvents and wastes
Electronics/Electrical Manufacturers	H	Spills, leaks, or improper handling or storage of chemicals and process wastes
Electroplaters	H	Spills, leaks, or improper handling or storage of solvents and other chemicals
Foundries Or Metal Fabricators	H	Spills, leaks, or improper handling or storage of solvents and other chemicals
Fuel Oil Distributors	H	Spills, leaks, or improper handling or storage of fuel oil
Furniture Stripping and Refinishing	H	Spills, leaks, or improper handling of hazardous chemicals
Gas Stations	H	Spills, leaks, or improper handling or storage of automotive fluids and fuels
Hazardous Materials Storage	H	Spills, leaks, or improper handling or storage of hazardous materials
Hazardous Waste Storage, Treatment and Recycling	H	Spills, leaks, or improper handling or storage of hazardous materials
Industrial Lagoons and Pits	H	Improper seepage or overflows of liquid wastes
Industry/Industrial Parks	H	Spills, leaks, or improper handling or storage of industrial chemicals and metals
Jewelry or Metalplating	H	Spills, leaks, or improper handling or storage of solvents, other chemicals, and process wastes
Junk Yards and Salvage Yards	H	Spills, leaks, or improper handling of automotive chemicals, wastes, and batteries
Landfills and Dumps	H	Seepage of leachate
Large Quantity Hazardous Waste Generators	H	Spills, leaks, or improper handling or storage of hazardous materials and waste
Machine/Metalworking Shops	H	Spills, leaks, or improper handling of solvents and metal tailings
Manure Storage or Spreading	H	Improper handling of manure (microbial contaminants)
Metal and Drum Cleaning/Reconditioning	H	Spills, leaks, or improper handling or storage of residual chemicals in used drums and solvents
Military Facilities (Past And Present) Type _____	H	Spills, leaks, or improper handling or storage of pesticides and herbicides, fuel, chemicals and other materials; may include ordnance or waste landfill/dump sites
Nuclear Power Plants	H	Spills, leaks, or improper handling of radioactive materials
Oil or Hazardous Material Sites	H, M, L	Tier Classified Oil or Hazardous Materials Sites are not ranked due to their site-specific character. Individual sites are identified in Appendix B.
Paint Shops	H	Spills, leaks, or improper handling or storage of paints, solvents, other chemicals
Paper Manufacturers	H	Spills, leaks, or improper handling or storage of bleaches, dyes, waste products, and other chemicals
Pesticide Storage or Use	H	Leaks, spills, improper handling, or over-application of pesticides
Petroleum Storage Facilities / Fossil Fuel Power Plants	H	Spills, leaks, or improper handling, or storage of petroleum products and equipment maintenance chemicals

Pharmaceutical Manufacturers	H	Spills, leaks, or improper handling and or storage of chemicals
Photo Processors	H	Spills, leaks, or improper handling or storage of photographic chemicals
Plastic Manufacturers	H	Spills, leaks, or improper handling or storage of solvents, resins and process wastes
Railroad Tracks And Yards	H	Over-application or improper handling of herbicides, leaks or spills of transported chemicals and maintenance chemicals: fuel storage
RCRA TSDF Facilities	H	Spills, leaks, or improper handling or storage of hazardous wastes
Repair Shops(Engine, Appliances, Etc.)	H	Spills, leaks, or improper handling or storage of engine fluids, lubricants, and solvents
Rust Proofing	H	Spills, leaks, or improper handling or storage of rust proofing chemicals, solvents, and automotive paint residuals
Service Stations/Auto Repair Shops	H	Spills, leaks, or improper handling of automotive fluids, and solvents
Superfund Sites	H	Spills, leaks, or improper handling or storage of oil or hazardous materials and waste
Tannery/Leather Manufacturers	H	Spills, leaks, or improper handling or storage of manufacturing chemicals and wastes
Textile Manufacturers	H	Spills, leaks, or improper handling or storage of manufacturing chemicals
Underground Storage Tanks	H	Spills, leaks, or improper handling stored materials
<b>Medium Risk Threats</b>		
Aboveground Storage Tanks	M	Spills, leaks, or improper handling of materials stored in tanks
Asphalt, Coal Tar, And Concrete Plants	M	Spills, leaks, or improper handling or storage of hazardous chemicals and wastes
Cemeteries	M	Leaks, spills, improper handling, or over-application of pesticides; historic embalming fluids
Dairy Farms	M	Improper handling of manure (microbial contaminants)
Dredge Disposal Facilities	M	Improper seepage or handling of dredge materials
Fertilizer Storage or Use	M	Leaks, spills, improper handling, or over-application of fertilizers
Fire Training Facilities	M	Improper use or storage of fuels and other chemicals
Fuel Oil Storage (at residences)	M	Spills, leaks, or improper handling of fuel oil
Gasification Plants (Oil Or Coal)	M	Spills, leaks, or improper handling or storage of oil and process residuals
Golf Courses	M	Over-application or improper handling of fertilizers or pesticides
Land Application Of Sewage Sludge	M	Improper management of sludge and runoff (metals)
Landscaping	M	Leaks, spills, improper handling, or over-application of fertilizers and pesticides
Lawn Care / Gardening	M	Over-application or improper storage and disposal of pesticides
Livestock Operations	M	Improper handling of manure (microbial contaminants)
Medical Facilities	M	Spills, leaks, or improper handling or storage of biological, chemical, and radioactive wastes
Nurseries	M	Leaks, spills, improper handling, or over-application of fertilizers, pesticides, and other chemicals
Pipeline (Oil)	M	Spills or leaks of oil
Printer And Blueprint Shops	M	Spills, leaks, or improper handling or storage of printing inks and chemicals
Prisons	M	Spills, leaks, or improper handling or storage of solvents, microbial waste, and other chemicals
Research Laboratories	M	Spills, leaks, or improper handling or storage of laboratory chemicals and wastes
Road And Maintenance Depots	M	Spills, leaks, or improper handling or storage of deicing materials, automotive fluids, fuel storage, and other chemicals
Sand And Gravel Mining/Washing	M	Spills or leaks from heavy equipment, fuel storage, clandestine dumping
Schools, Colleges, and Universities	M	Spills, leaks, or improper handling or storage of fuel oil, laboratory, art, photographic, machine shop, and other chemicals

Septic Systems / Cesspools	M	Microbial contaminants, and improper disposal of hazardous chemicals
Slaughterhouses	M	Improper handling of manure and other waste products; microbial contaminants
Small quantity hazardous waste generators	M	Spills, leaks, or improper handling or storage of hazardous materials and waste
Snow Dump	M	Improper handling of melt water containing de-icing and other chemicals from roads and parking lots
Tire Dumps	M	Improper handling or management of tires
Transportation Corridors	M	Accidental leaks or spills of fuels and other hazardous materials, over-application or improper handling of pesticides
Waste Incinerator	M	Improper management and seepage of water contacting waste materials; ash disposal
Waste Transfer/Recycling Station	M	Improper management, seepage, and runoff of water contacting waste materials
Wastewater Treatment Plant/Collection Facility/ Lagoon	M	Improper handling or storage of treatment chemicals or equipment maintenance materials; improper management of wastewater
Water Treatment Sludge Lagoon	M	Improper management of sludge and wastewater
Wood Preserving Facilities	M	Spills, leaks, or improper handling or storage of wood preservatives
<b>Low Risk Threats</b>		
Aquatic Wildlife	L	Microbial contaminants
Car/Truck/Bus Washes	L	Improper management of vehicle wash water; soaps; oils; greases; metals; salts
Combined Sewer Overflows	L	Microbial and non-microbial contaminants including industrial wastewater; improper disposal of hazardous wastes
Composting Facilities	L	Storage and improper handling of organic material, animal waste, and runoff
Fishing/Boating	L	Fuel and other chemical spills, microbial contaminants
Food Processors	L	Spills, leaks, or improper handling or storage of cleaners and other chemicals; microbial contaminants
Forestry Operation	L	Leaks, spills, or improper handling of herbicides or pesticides, equipment maintenance materials; road building
Funeral Homes	L	Spills, leaks, or improper handling of hazardous chemicals
Laundromats	L	Improper management of wash water
NPDES Locations	L	Improper disposal of hazardous material and wastes
Nursing Homes	L	Microbial contaminants
Stormwater Drains/ Retention Basins	L	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns
Transmission Line Rights-of-Way - Type:	L	Construction and corridor maintenance, over-application or improper handling of pesticides
Utility Substation Transformers	L	Spills, leaks, or improper handling of chemicals and other materials including PCBs
Very Small Quantity Hazardous Waste Generator	L	Spills, leaks, or improper handling or storage of hazardous materials and waste



**WMECO RIGHTS OF WAY  
VEGETATION MANAGEMENT PLAN**

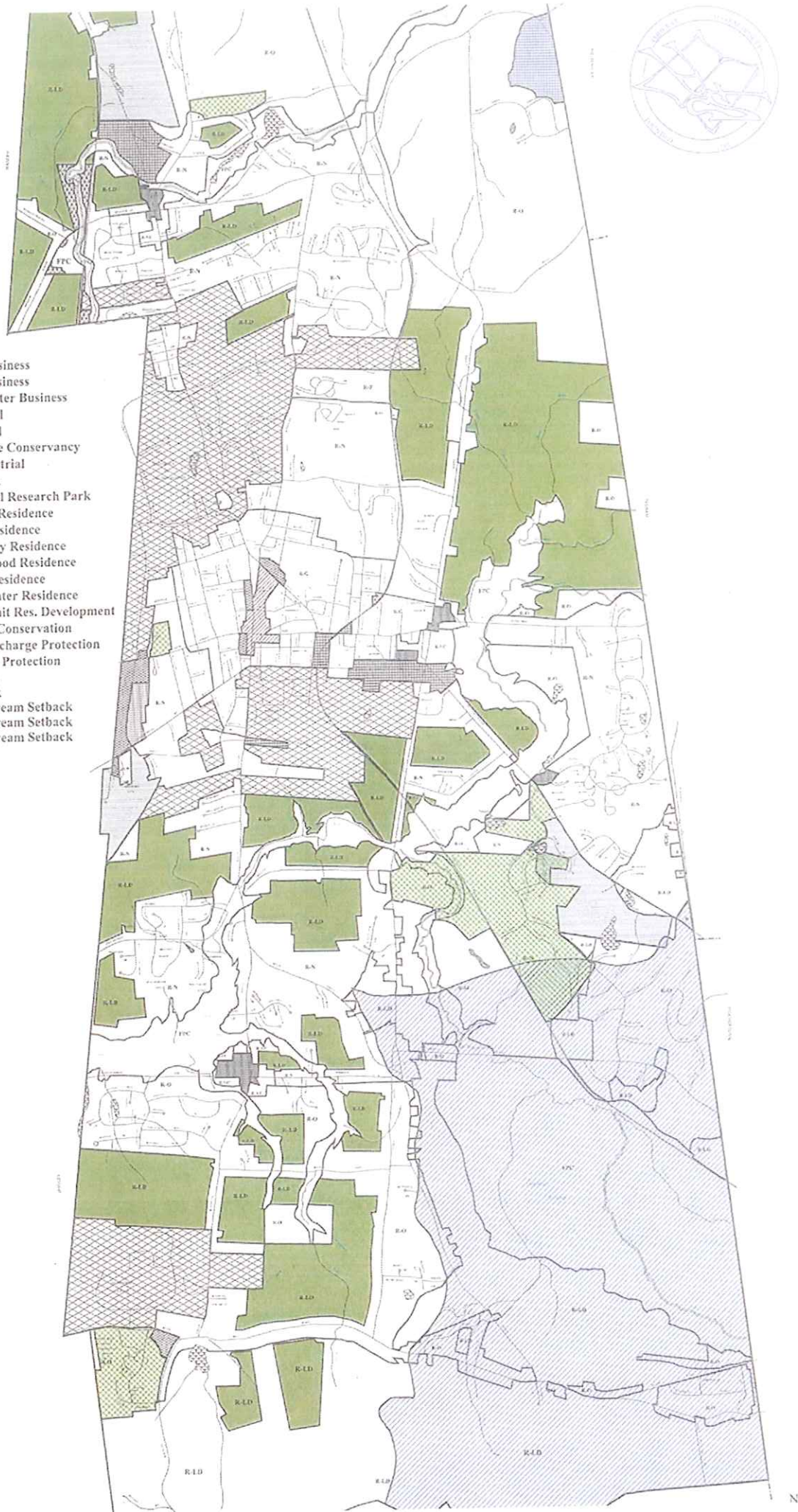
# Legend

## Zoning Districts

- General Business
- Limited Business
- Village Center Business
- Commercial
- Educational
- Flood Prone Conservancy
- Light Industrial
- Office Park
- Professional Research Park
- Fraternity Residence
- General Residence
- Low Density Residence
- Neighborhood Residence
- Outlying Residence
- Village Center Residence
- Planned Unit Res. Development
- Farmland Conservation
- Aquifer Recharge Protection
- Watershed Protection

## Stream Setbacks

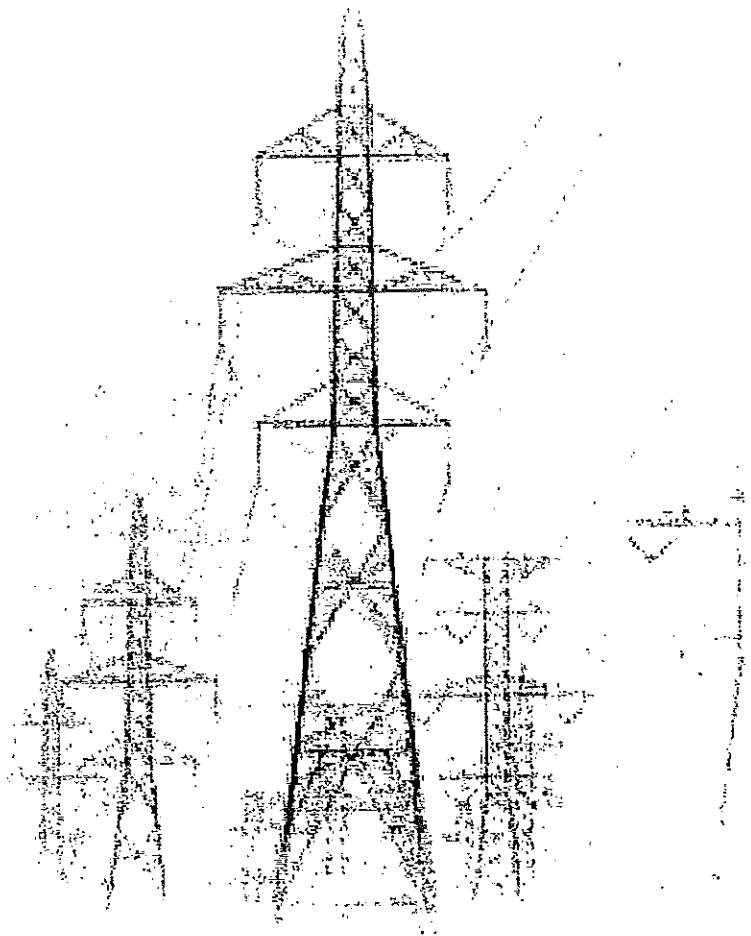
- No Setback
- 25 Foot Stream Setback
- 50 Foot Stream Setback
- 75 Foot Stream Setback



# **Rights-of-Way Vegetation Management Plan (VMP)**

**for the Northeast Utilities System,  
Western Massachusetts Electric Company,  
Holyoke Water Power Company,  
and**

**Holyoke Power and Electric Company**



**2004 - 2008**

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TO BE MET IN LIEU OF HERBICIDE TREATMENT

NORTHEAST UTILITIES  
DISTRIBUTION  
EASEMENT RIGHT-OF-WAY CONDITIONS  
TO BE MET IN LIEU OF HERBICIDE TREATMENT

### MOWER AGREEMENT

ALTERNATIVE RIGHT-OF-WAY VEGETATION MANAGEMENT AGREEMENT USING  
LOW GROWING PLANT COMMUNITIES

## I. INTRODUCTION

This Vegetation Management Plan (VMP) describes the Northeast Utilities System (NU), Western Massachusetts Electric Company's (WMECO), Holyoke Water Power Company's (HWP), and Holyoke Power and Electric Company's (HPE) (hereinafter collectively referred to as "The Company") integrated vegetation management program for transmission and distribution rights-of-way and local distribution lines over the 5 year period from 2004 through 2008 in compliance with the Commonwealth of Massachusetts 333 CMR 11.00, Right of Way Management regulations.

## II. GOALS AND OBJECTIVES

This section summarizes the goals and objectives of this vegetation management plan.

### A. Goals of Vegetation Management Plan

The primary goal of this electric utility right-of-way management plan is the control of vegetation and establishment of standard operating procedures to ensure the maintenance of safe and uninterrupted electric service through its transmission and distribution lines. Physical and visual access must also be assured in order to permit routine and emergency line maintenance and operations which are essential to preserve continuity and reliability of service.

This plan is a guiding document which provides structure and sensibility to the Yearly Operational Plans (YOP's). A YOP will be prepared each year to describe the detailed vegetation management operation for the calendar year consistent with the terms of the VMP's.

### B. Objectives of Vegetation Management Plan

The principal objective of woody vegetation management is to selectively eliminate that woody vegetation which may potentially short circuit overhead conductors or significantly restrict physical access on the right-of-way. This management program will accomplish that objective at the lowest cost to its customers with due regard for worker safety, protection of public health and without unreasonable adverse effects on the environment, including the protection of sensitive areas. Selective control benefits wildlife habitat for many species of animals by encouraging plant communities that provide food and cover. The program is also designed to maintain acceptable appearance of the right-of-way and to minimize erosion by allowing the development of low shrubs and ground cover. The low shrubs and ground cover inhibit the re-establishment of target tree species.



The foregoing will be accomplished in full compliance with all applicable state and federal laws and regulations.

#### C. Sensitive Areas

Special protection is afforded sensitive areas in which public health, environmental or agricultural concerns warrant special protection to further minimize risks of unreasonable adverse effects. Herbicide use is limited near public and private water supplies, standing or flowing water, wetlands, and agricultural and habitated areas.

#### D. Public Involvement

Public involvement is imperative to the development of a vegetation management plan. Regulatory procedures have been established which guarantee all interested parties ample opportunity for input and review. In total, this vegetation management plan provides a comprehensive and integrated framework which protects the environment and the health, safety and welfare of the Citizens of the Commonwealth.

#### E. Location of Rights-of-Way

The Company's service area extends from the Berkshire Mountains bordering New York State to the highly urbanized area surrounding Springfield, and reaches in a north-south direction from the Vermont-New Hampshire border to Connecticut.

The Massachusetts portion of Northeast Utilities (NU) is comprised of four operating subsidiaries or units located in western Massachusetts. The Northeast Utilities System transmission unit operates the transmission system in the mid to western sections of Massachusetts. The Western Massachusetts Electric Company (WMECO) operates the distribution facilities and provides electrical service to over 195,400 customers across western Massachusetts. The Holyoke Water Power (HWP) operates both transmission and distribution facilities which serve industrial customers in Holyoke. Finally, the Holyoke Power and Electric Company (HPE) operates both transmission and distribution facilities in Holyoke, South Hadley and Chicopee.

Electric service is delivered through 400 pole miles of transmission lines, 150 pole miles of bulk supply distribution lines and 3,300 pole miles of local distribution lines. Transmission line rights-of-way are the backbone of the system and operate at voltages ranging from 69,000 to 345,000 volts. They provide the connection between generating plants and area substations and are inter-connected with the transmission facilities of other utilities. Bulk

supply distribution rights-of-way operate at either 23,000 or 13,800 volts. They provide the link between substations and local distribution lines which deliver electrical energy to customers. Approximately 90% of the local distribution lines are located along roads and driveways, bordering on a variety of privately and publicly owned land. The other 10% are off-road lines which cross property with a wide range of land uses including forestland, agricultural and recreational areas, and backyards.

The Company's rights-of-way are located in the following 72 municipalities:

Agawam	East Longmeadow	Longmeadow	Southampton
Amherst	Erving	Ludlow	South Hadley
Ashfield	Gill	Middlefield	Southwick
Becket	Granby	Montague	Springfield
Belchertown	Granville	Montgomery	Stockbridge
Bernardston	Greenfield	New Ashford	Sunderland
Blandford	Hadley	Northfield	Tolland
Buckland	Hampden	Otis	Tyringham
Cheshire	Hancock	Pelham	Warwick
Chester	Hatfield	Peru	Washington
Chesterfield	Hinsdale	Pittsfield	Wendell
Chicopee	Holyoke	Plainfield	Westfield
Colrain	Huntington	Richmond	Westhampton
Conway	Lanesborough	Russell	West Springfield
Cummington	Lee	Sandisfield	Whately
Dalton	Lenox	Savoy	Wilbraham
Deerfield	Leverett	Shelburne	Windsor
Easthampton	Leyden	Shutesbury	Worthington

### III. IDENTIFICATION OF TARGET VEGETATION

The primary objective of electric utility vegetation management is the selective control of those woody plants capable of growing tall enough to interfere with the conductors and access. This section identifies this tall-growing, "target vegetation" by plant species as related to its location on transmission or distribution rights-of-way.

#### A. Plant Species

For the purposes of electric utility vegetation control, plant species are generally divided into two groups, undesirable species capable of interfering with the conductors or access, and desirable species which normally cannot. It is the contractor's responsibility to be knowledgeable about and to instruct his crews in the identification of desirable and undesirable species and the various control techniques necessary for integrated vegetation management.

Electric company personnel manage the contractors performing woody vegetation control, and ensure that contract conditions are met. These groups are defined below:

### 1. Undesirable Species

Undesirable species include trees, tall maturing shrubs, and vines. Trees are woody plants normally maturing at 20 feet or more in height, usually with a single trunk, un-branched for several feet above ground and with a definite crown. Tall maturing shrubs are woody plants maturing over 12 feet but less than 20 feet in height and presenting a generally bushy appearance because of their several erect spreading or prostrate stems. Undesirable tree species include, but are not limited to, poplar (Populus spp.), pitch pine (Pinus rigida) and red maple (Acer rubrum) which are capable of growing into the conductors. Tall maturing shrubs include, but are not limited to, sumac (Rhus spp.), speckled alder (Alnus rugosa), and buckthorn (Rhamnus spp.). Woody vines such as wild grape (Vitis spp.) and Virginia creeper (Parthenocissus quinquefolia) are also controlled when they risk electric reliability by climbing structures, poles and guy wires.

### 2. Desirable Species

Desirable species include low maturing shrubs, ferns, grasses, and herbs. Low maturing shrubs are woody plants normally maturing no taller than 12 feet in height and presenting a generally bushy appearance because of their several erect spreading or prostrate stems. Most shrubs such as mountainlaurel (Kalmia latifolia), highbush blueberry (Vaccinium corymbosum) and hazelnut (Corylus americana) usually cannot grow into the conductors and are normally preserved and encouraged to grow. Non-woody plant species such as ferns, grasses, herbs and wildflowers benefit from the reduced competition for space and are allowed to flourish.

The following is a partial list of the most common shrub species that are normally preserved.

Hazelnut  
Gray Dogwood  
Juniper SPP  
Viburnum SPP  
Sweetfern  
Bayberry  
Lowbush Blueberry

Huckleberry  
Spicebush  
Pinxterbloom Azalea  
Mountainlaurel  
Redosier Dogwood  
Highbush Blueberry



#### IV. METHODS OF VEGETATION MANAGEMENT AND RATIONALE FOR USE

This section describes the intended methods of vegetation management and rationale for use, including vegetation control techniques, equipment proposed for use, timing and other control procedures. An integrated approach to vegetation management has been developed which minimizes the use of herbicides through a balanced mix of cultural practices, mechanical control, and a carefully planned program of chemical control. State of the art techniques, time tested methods, and a low input approach to vegetation control are incorporated into an innovative and interdisciplinary plan. Above all else, a major commitment is made to the protection of human health and safety, and the prevention of unreasonable adverse effects on the environment. Vegetation control is scheduled so rights-of-way are inspected at 4 to 5 year intervals and maintained if necessary to ensure the integrity of the electrical system.

##### A. High volume foliar herbicide

Description: An herbicide mixture that is applied to leaves of undesirable plants. Application is typically made using hydraulic spray equipment mounted on all terrain vehicles

Uses: Used on medium to high density brush in non-sensitive areas.

Pros: High volume application is efficient where the brush density and/or terrain limits access. Provides a good way to gain control of high density areas where brush is not too tall.

Cons: Less selective than other methods. Poor visual impact (may brown-out large areas). Weather dependent (i.e., cannot apply during precipitation or wind exceeds 10 mph). Limited application season (apply when plants are in full leaf, June through September).

##### B. Low volume foliar herbicide

Description: Small amount of herbicide mixture is applied to leaves of individual, undesirable plants. Application is usually made with hand-pump or motorized "backpack" low-pressure sprayers. Since a smaller amount of mixture is used in the "low volume foliar" method than in the "foliar" method, the mix contains a higher concentration of herbicide. However, an equal amount of the active ingredient is applied to the target plants.

Uses: Useful in general and some sensitive areas on individual targets less than 12' in height, and where terrain precludes the use of heavy equipment.

Pros: Efficient, effective method of selectively controlling individual plants.

APPENDIX B (continued)

MOWER AGREEMENT

Date \_\_\_\_\_

Town of \_\_\_\_\_

RE: Municipal Brush Control Program

Dear \_\_\_\_\_:

Western Massachusetts Electric Company ("WMECO") and the towns of \_\_\_\_\_, Massachusetts (the "area towns") have discussed an arrangement by which WMECO will assist the efforts of the area towns to cut brush along the public streets in said towns. WMECO and the area towns recognize that from time to time it is necessary to cut brush along these public roads, to maintain a safe and visually acceptable roadway and to prevent the potential contact of brush with WMECO's electric distribution lines. These WMECO lines are specified in paragraph 1, below. In support of the area towns, WMECO is willing to make an annual contribution for a brush control program in the amount of \$ \_\_\_\_\_ on the following terms and conditions:

1. The Town of \_\_\_\_\_ shall lease or otherwise obtain a brush mower (the "equipment") suitable for cutting and trimming brush and other vegetation along the town maintained roads of the area towns. The equipment shall be made available by the Town of \_\_\_\_\_ to each of the area towns at least once a year. Each area town shall cut brush around and beneath all WMECO lines annually. The equipment may also be used to cut brush along portions of town maintained roads where there are no WMECO lines. Maps showing the location of existing WMECO lines in the area towns are available upon request from the WMECO Arborist (Daryl Jassen). Attached as Exhibit 1 are specifications of the miles of pole lines located in each town. WMECO will update this information as necessary. Brush located beneath the WMECO lines shall be cut to WMECO specifications, which is attached as Exhibit 2.
2. The area towns shall make a good faith effort to cut all brush within reach of the equipment per the WMECO specifications (Exhibit 2). If brush is out of reach of the mower (i.e. on top of an outcropping/ledge, too far off road), it need not be (hand) cut by the town.

-continued-

3. The Town of \_\_\_\_\_ shall notify Daryl Jassen of WMECO of the proposed usage schedule of the equipment in the area towns. Each town shall notify Daryl Jassen (telephone 413-787-9051) when the mower is leaving their town and moving to another.
4. On or about \_\_\_\_\_, WMECO will make an annual contribution (gift) of \$\_\_\_\_\_ to the Town of \_\_\_\_\_ in support of this brush control program for a period of five (5) years. WMECO's agreement to make this annual contribution is conditioned upon the performance of each of the area towns in accordance with the terms and conditions of this letter. WMECO may, at its option, cancel this agreement upon sixty (60) days written notice to the Town of Plainfield and cease annual contributions if any one or more of the area towns fail(s) to cut or trim brush beneath the WMECO lines as provided herein and fail(s) to cure said non-performance within said sixty (60) day period. In the case of non-performance, the area towns agree that any portion of WMECO's \$\_\_\_\_\_ contribution for the current year which can be recouped from the leasing company will be returned to WMECO.

In addition, WMECO shall also have the right to cancel this agreement for reasons other than non-performance, as long as WMECO provides 60 days written notice to the said area towns and reimburses the Town of Plainfield for any charges incurred to terminate the equipment lease.

5. Except as provided in paragraph 4, above, WMECO shall not be responsible for any costs associated with the equipment, including but not limited to lease payments, maintenance costs and/or insurance. In addition, the equipment shall be used at the sole risk of the area towns, and WMECO shall not incur any liability in connection with the use thereof.
6. Additional municipalities may be added to this agreement at the option of the parties as long as the addition is agreed to in writing by all municipalities participating in the program and WMECO, and provided said additional municipalities agree to and are bound by the terms herein.

Please indicate your acceptance of these terms and conditions, and the acceptance by the other area towns, by executing a copy of this letter and returning it to the undersigned. This agreement will become effective upon WMECO's receipt of this letter executed by all the parties listed below, but will not begin before \_\_\_\_\_.

-continued-

WESTERN MASSACHUSETTS ELECTRIC COMPANY

By: \_\_\_\_\_  
Its Director of Energy Delivery WMEC

Agreed and accepted by:

Town of \_\_\_\_\_ (lead town)

By \_\_\_\_\_  
Its

Date: \_\_\_\_\_

Town of \_\_\_\_\_

By \_\_\_\_\_  
Its

Date: \_\_\_\_\_

Town of \_\_\_\_\_

By \_\_\_\_\_  
Its

Date: \_\_\_\_\_

Town of \_\_\_\_\_

By \_\_\_\_\_  
Its

Date: \_\_\_\_\_

Town of \_\_\_\_\_

By \_\_\_\_\_  
Its

Date: \_\_\_\_\_

## Exhibit 1

### Miles of Pole Line by Town

<u>Town</u>	<u>approximate pole line miles, roadside</u>
A	x
B	x
C	x
D	x
E	<u>x</u>
	xxx

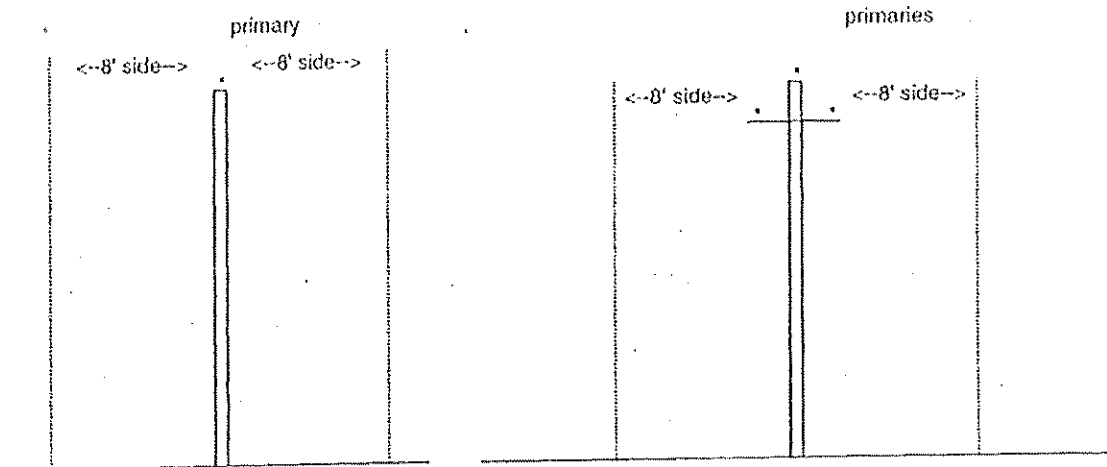
## Exhibit 2

### Brush Specifications

The width of the brush removal area shall be 8 feet each side of the outermost conductor.

All tree stems less than or equal to 4 inches DBH (diameter breast height) shall be considered brush. Brush shall not be trimmed, but rather cut at or near ground level.

horizontal brush clearance zones for single and three phase primary conductors:



APPENDIX B (continued)

Alternative right-of-way vegetation management agreement using low growing  
plant communities

Date \_\_\_\_\_

Dear \_\_\_\_\_:

This will confirm our conversation on \_\_\_\_\_ concerning the control of trees, brush or vines ("woody vegetation") within the \_\_\_\_\_ KV line \_\_\_\_\_ right-of-way (ROW) on your property near \_\_\_\_\_, in the Town of \_\_\_\_\_. If this letter correctly states our agreement on this matter, please sign it on the line after the word "Agreed" in the margin below and return it in the self-addressed envelope to:

Name  
WMECo  
P.O. Box 2010  
West Springfield, MA 01090-2010

Proper maintenance of our distribution lines and structures, including keeping the lines free from contact with woody vegetation, is essential to safe and reliable electric service. We have an easement on your land that allows us to control woody vegetation in the right-of-way, in order to keep our lines, structures and access to them clear. The most cost-effective means of vegetation control is through the use of herbicides. Because you do not want us to use herbicides on your land, we have reached the following agreement:

- A. WMECo agrees to perform work necessary to remove woody vegetation and establish an herbaceous plant community on the portion of ROW on your land.
- B. You agree, thereafter, to keep this portion of ROW free from woody vegetation according to the following standards:
  - 1. Woody vegetation includes all trees and shrubs that are capable of growing tall enough to touch the lines. It also includes all trees and shrubs that are capable of interfering with access along, between, and around line structures (including, but not limited to, sumac).
  - 2. Low growing shrubs that mature at a height of 2 feet or less (e.g. Lowbush Blueberry) may remain as well as grasses and forbs.
  - 3. At any time, no stem of a woody vegetation species will be allowed to exceed 6 feet in height on this portion of the ROW.

Warning: The distribution lines located in the ROW carry live electric current. As a safety precaution, you must not cut trees, brush or vines that are in close proximity to the overhead conductors. Contact with the lines can cause serious injury or death. If woody vegetation is growing near the lines, the NU Representative will make a determination on whether or not NU will cut, top or trim back the vegetation away from the conductors to a safe distance. After that, the property owner or his contractor will be required to perform maintenance.

Agreed: \_\_\_\_\_ (WMECo) \_\_\_\_\_ (date)

Agreed: \_\_\_\_\_ (Land Owner) \_\_\_\_\_ (date)

CC:



## APPENDIX C

### 333 CMR: PESTICIDE BOARD

#### 333 CMR 11.00: RIGHTS OF WAY MANAGEMENT

##### Section

- 11.01: Purpose
- 11.02: Definitions
- 11.03: General Provisions
- 11.04: Sensitive Area Restrictions
- 11.05: Vegetation Management Plan (VMP)
- 11.06: Yearly Operational Plan (YOP)
- 11.07: Public Notification
- 11.08: Notice of Modification and Revocation
- 11.09: Right-of-Appeal
- 11.10: Penalties

##### 11.01: Purpose

The purpose of 333 CMR 11.00 is to promote the implementation of Integrated Pest Management (IPM) Techniques and to establish those standards, requirements and procedures necessary to minimize the risk of unreasonable adverse effects on human health and the environment associated with the use of herbicides to maintain rights-of-way and to establish a statewide and uniform regulatory process. 333 CMR 11.00 establishes procedures which guarantee ample opportunity for public and municipal agency review and input on right-of-way maintenance plans.

##### 11.02: Definitions

For the purpose of 333 CMR 11.00, the following definitions shall apply.

Agricultural Area, shall refer to, but not be limited to, actively cultivated gardens, greenhouses, orchards, fields, pastures, and other areas where herbicides might impact adversely on the vegetation under cultivation or agricultural management.

Applicant, shall refer to any person representing federal, state or local governments or agencies, utilities, railroads, pipelines, that intend to maintain a right-of-way by the application of herbicide.

Ballast, shall refer to the coarse gravel or crushed rock onto which the ties, tracks and any switching, signaling and communication devices of a railroad are laid.

Broadcast, shall refer to any non-selective herbicide application technique which results in application to all vegetation within a target area.

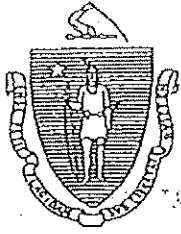
Department, shall refer to the Department of Food and Agriculture.

Foliar Treatment, shall refer to any technique which applies herbicide to leaves of the target vegetation.

Inhabited Area, shall refer to, but not be limited to residences, schools, hospitals, parks and recreational facilities or other areas in which humans generally live, work or gather.

Low Pressure, shall refer to pressure under 60 psi.

Maps, shall refer to maps which are of such accuracy and scale, as determined by the Department, to provide sufficient detail so that sensitive areas can be delineated, or which show bench marks or other permanent structures located on the right-of-way which allow the delineation of sensitive areas.



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

MITT ROMNEY  
Governor

KERRY HEALEY  
Lieutenant Governor

ELLEN ROY HERZFELDER  
Secretary

EDWARD P. KUNCE  
Acting Commissioner

March 24, 2003

Mr. Robert Pariseau  
Amherst DPW  
586 South Pleasant Street  
Amherst, MA 01002

Re: Amherst, Compliance with Wellhead Protection Regulations 310 CMR 22.21(2) for Wells 01G, 04G, 05G, 06G and 07G, and Compliance with the Best Effort Requirement 310 CMR 22.21(1)(d) for Well 02G

Dear Mr. Pariseau:

The Amherst Water Department, #1024000 is in compliance with the MA Wellhead Protection Regulations and requirements for the above listed wells. The following documents are evidence of your compliance and are on file in the Bureau of Resource Protection, Drinking Water Program:

1. Town of Amherst 'Aquifer Recharge Protection District Bylaw', submitted to DEP in 1995.
2. Town of Amherst 'Board of Health Floor Drain and Animal Manure Regulation', adopted 2000.
3. Town of Amherst 'Aquifer Recharge Protection District Map', adopted 1995; and
4. Town of Belchertown 'Groundwater and Recharge Protection Board of Health Regulation', adopted 2002 and meets most of 310 CMR 22.21(2). This regulation covers the Zone II of Amherst's Well 02G located in Belchertown.

Compliance with state wellhead protection regulations and requirements also satisfy the wellhead protection conditions of your water withdrawal permit #9P-1-06-008.01. We thank you for your efforts in protecting the drinking water supplies for the residents and businesses of Amherst. If you have any questions concerning this letter, please contact me at 617-556-1070.

Cordially,

Catherine Sarafinas,  
Regional Planner, DEP Boston

cc: Deirdre Cabral, DWP Chief, WERO; Catherine Skiba, DWP WERO

AMHERST ZONING BY-LAWS - TITLE PAGE  
HAMPSHIRE COUNTY  
TOWN OF AMHERST

AMHERST MASSACHUSETTS

AMENDED THROUGH 11-1-99 STM  
Approved by Attorney General 2-23-00

Received at Munilaw 3-23-00

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HAMPSHIRE COUNTY  
TOWN OF AMHERST

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# TOWN OF AMHERST, MA ZONING MAP



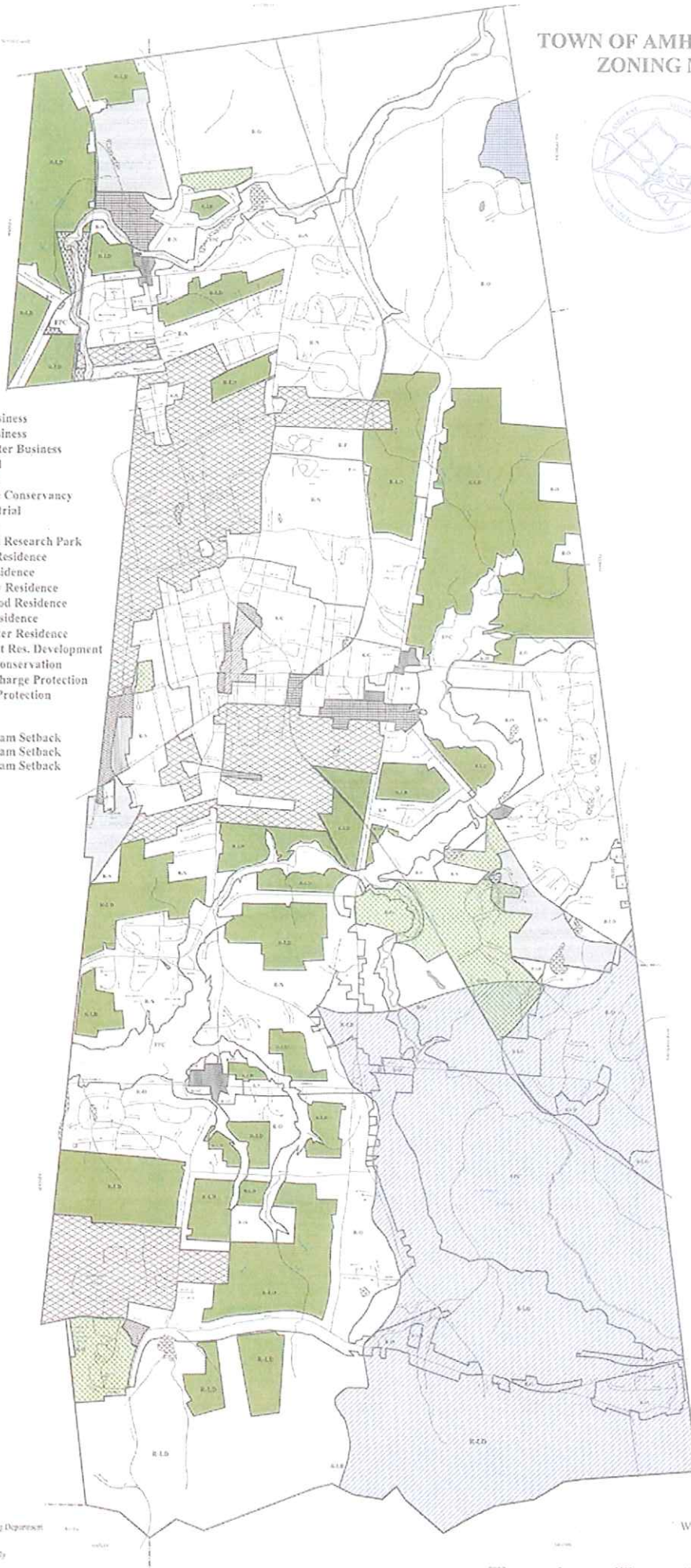
## Legend

### Zoning Districts

- General Business
- Limited Business
- Village Center Business
- Commercial
- Educational
- Flood Prone Conservancy
- Light Industrial
- Office Park
- Professional Research Park
- Fraternity Residence
- General Residence
- Low Density Residence
- Neighborhood Residence
- Outlying Residence
- Village Center Residence
- Planned Unit Res. Development
- Farmland Conservation
- Aquifer Recharge Protection
- Watershed Protection

### Stream Setbacks

- No Setback
- 25 Foot Stream Setback
- 50 Foot Stream Setback
- 75 Foot Stream Setback



Belchertown

Section 145-14. Aquifer Protection District

A. Purpose. The purpose of this section is to promote the health, safety and welfare of the community by protecting and preserving the groundwater resources of Belchertown from any use of land or structures which reduce the quality or quantity of its water resources.

B. Scope of authority. The Aquifer Protection District is an overlay district and shall be superimposed on the other districts established by this chapter. All uses, dimensional requirements and other provisions of this chapter applicable to such underlying districts shall remain in force and effect, except that where the Aquifer Protection District imposes greater or additional restrictions and requirements, such restrictions or requirements shall prevail. Any uses not permitted in underlying districts shall remain prohibited.

C. Establishment of district. The Aquifer Protection District is herein established to include all specified lands within the Town of Belchertown. The intent of the Aquifer Protection District is to include lands lying within the primary recharge areas of groundwater aquifers which provide public water supply. The map entitled "Aquifer Protection District," Town of Belchertown, on file with the Town Clerk, delineates the boundaries of the district. Where the bounds delineated are in doubt or in dispute, the burden of proof shall be upon the owner(s) of the land in question to show where they should be properly located. At the request of the owner(s), the town may engage a professional hydrogeologist to determine more accurately the location and extent of an aquifer or primary recharge area. In the case of a determination by a hydrogeologist that the bounds delineated on the above said map are incorrect for the property in question, the town shall pay for the investigation. In the case of a determination by a hydrogeologist that the bounds delineated on the above said map are correct for the property in question, the owner(s) shall pay for the investigation.

D. Prohibited uses. The following uses are prohibited in the Aquifer Protection District:

(1) Commercial uses which manufacture, process, store or dispose of hazardous wastes in amounts exceeding the minimum threshold amounts requiring compliance with Massachusetts Department of Environmental Protection Hazardous Waste Regulation 310 CMR 30:

(a) Trucking or bus terminals and motor vehicle gasoline sales.

(b) Car washes, except when located on public water and sewer.



#### 4.1 Water Supply Protection District

##### 4.10 Purpose

The purposes of the Water Supply Protection District are to promote the health, safety and welfare of the community by protecting and preserving the surface and groundwater supply resources of Granby from any use of land or structures which reduce the quality or quantity of its water supply resources.

##### 4.11 Scope of Authority

The Water Supply Protection District is an overlay district and shall be superimposed on the other districts established by this bylaw. All regulations of the Granby Zoning Bylaw applicable to such underlying districts shall remain in effect, except that where the Water Supply Protection District imposes additional regulations, such regulations shall prevail.

##### 4.12 District Delineation

The Water Supply Protection District is herein established to include all lands within the Town of Granby lying within the primary recharge area of groundwater aquifers which now or may in the future provide public water supply. The map entitled "Water Supply Protection District, Town of Granby", on file with the Town Clerk, delineates the boundaries of the district.

Where the bounds delineated are in doubt or in dispute, the burden of proof shall be upon the owner(s) of the land in question to show where they should be properly located. At the request of the owner(s), the Town may engage a professional hydrogeologist to determine more accurately the location and extent of an aquifer recharge area, and shall charge the owner for all of the cost of the investigation.

##### 4.13 Permitted Uses

All uses permitted in the underlying Residential RS District shall be permitted, with the following exceptions:

1. Home occupations which involve the use or disposal of hazardous materials or wastes, including but not limited to furniture stripping, auto body repair, engine repair and photographic processing in commercial volumes, are prohibited.

##### 4.14 Uses by Special Permit

1. Uses allowed by special permit from the Zoning Board of Appeals in accordance with Section 6.2 within the Water Supply Protection District are described in Section 3.0 and shall be subject to the following additional restrictions:

a. The conversion of a one-family dwelling existing at the time of enactment of this bylaw into a two-family dwelling, provided that the dwelling has sufficient septic system capacity to meet the requirements of the Massachusetts Sanitary Code.

2. The Board of Appeals may grant the requested special permit only upon finding that the proposed use meets the following standards and those specified in Section 6.27 of this bylaw. The proposed use must:

-- in no way, during construction or thereafter, adversely affect the existing or potential quality or quantity of water that is available in the Water Supply Protection District, and;

-- be designed to avoid substantial disturbance of the soils, topography, drainage, vegetation and other water-related natural characteristics of the site to be developed.

#### 4.15 Prohibited Uses

1. Underground storage and/or transmission of petroleum products excluding liquified petroleum gas, except that storage tanks within the basement of a building shall be permitted.

2. Outdoor storage of salt, de-icing materials, pesticides or herbicides shall be prohibited without suitable overhead protection from weather and an impervious containment area adequate to hold the volume of stored chemicals.

3. The use of septic system cleaners which contain toxic chemicals, including but not limited to methylene chloride and 1-1-1 trichlorethane.

#### 4.16 Restricted Uses

1. Excavation for removal of earth, sand, gravel and other soils shall not extend closer than five (5) feet above the annual high groundwater table. A monitoring well shall be installed by the property owner to verify groundwater elevations. This section shall not apply to excavations incidental to permitted uses, including but not limited to providing for the installation or maintenance of structural foundations, freshwater ponds, utility conduits or on-site sewage disposal.

a. Access road(s) to extractive operation sites shall include a gate or other secure mechanism to restrict public access to the site. All earth removal operations must comply with the provisions of Section 5.8 - Earth Removal Bylaw.

b. The use of sodium chloride for ice control shall be minimized, consistent with public highway safety requirements.

c. Commercial fertilizers, pesticides, herbicides, or other leachable materials shall not be used in amounts which result in groundwater contamination levels exceeding

Belchertown

Section 145-14. Aquifer Protection District

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a. Access road(s) to extractive operation sites shall include a gate or other secure mechanism to restrict public access to the site. All earth removal operations must comply with the provisions of Section 5.8 - Earth Removal Bylaw.

b. The use of sodium chloride for ice control shall be minimized, consistent with public highway safety requirements.

c. Commercial fertilizers, pesticides, herbicides, or other leachable materials shall not be used in amounts which result in groundwater contamination levels exceeding

Massachusetts Drinking Water Standards or National Interim Primary Drinking Water Regulations.

d. Above ground storage tanks, including tanks within the basement of a building for oil, gasoline or other petroleum products shall be protected from the environment and placed on a diked impermeable surface to prevent spills or leaks from reaching groundwater. Floor faults shall be plugged to prevent discharges of leaks. No floor drains shall be allowed, only sump pumps to allow for pumped removal of any spilled materials.

Belchertown

Section 145-14. Aquifer Protection District

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(1) Commercial uses which manufacture, process, store or dispose of hazardous wastes in amounts exceeding the minimum threshold amounts requiring compliance with Massachusetts Department of Environmental Protection Hazardous Waste Regulation 310 CMR 30:

(a) Trucking or bus terminals and motor vehicle gasoline sales.

(b) Car washes, except when located on public water and sewer.

(c) Wood preserving and furniture stripping.

(d) Solid waste landfills, dumps and junk and salvage yards, with the exception of the disposal of brush and stumps.

(e) Business and industrial uses, not agricultural, which involve the on-site disposal of process wastes from operations.

(f) Disposal of liquid or leachable wastes, except for:

[1] The installation or enlargement of a subsurface waste disposal system for a residential dwelling.

[2] Normal agricultural operations.

[3] Business or industrial uses which involve the on-site disposal of wastes from personal hygiene and food preparation for residents, patrons and employees.

(g) Underground storage and/or transmission of oil, gasoline or other petroleum products, excluding liquefied petroleum gases.

(h) Outdoor storage of salt, de-icing materials, pesticides or herbicides.

(i) The use of septic system cleaners which contain toxic chemicals.

(2) The rendering impervious by any means of more than 15% of the area of any single lot.

#### E. Restricted uses.

(1) Excavation for removal of earth, sand, gravel and other soils shall not extend closer than five feet above the annual high groundwater table. A monitoring well shall be installed by the landowner to show groundwater elevations. This subsection shall not apply to uses incidental to permitted uses, including but not limited to providing for the installation or maintenance of structural foundations, freshwater ponds, utility conduits or on-site sewage disposal. An access road(s) to extractive operation sites shall include a gate or other secure mechanism to restrict public access to the site.

(2) The use of sodium chloride for ice control shall be minimized, consistent with public highway safety requirements.



(3) Commercial fertilizers, pesticides, herbicides or other leachable materials shall not be used in amounts which result in groundwater contamination.

(4) Manure shall be stored in a structure which prevents leachable elements from contaminating groundwater.

(5) Individual septic systems may not exceed design standards set in accordance with 310 CMR 15.00 to receive more than 110 gallons of sewage per 1/4 acre under one ownership per day or 440 gallons of sewage on any one acre under one ownership, whichever is greater, except the replacement or repair of an existing system that will not result in an increase in design capacity above the original design.

F. Drainage. All runoff from impervious surfaces shall be recharged in the site by being diverted toward areas covered with vegetation for surface infiltration to the extent possible. Dry wells shall be used only where other methods are infeasible and shall be preceded by oil, grease and sediment traps to facilitate removal of contamination.

G. Uses by special permit. [Amended 5-9-1994 ATM by Art. 20]

(1) Nonconforming uses which were lawfully existing, lawfully begun or in receipt of a building or special permit prior to the first publication of notice of public hearing for the Aquifer Protection District section of this chapter may be continued. Such nonconforming uses may be extended or altered, as specified in MGL c. 40A, Section 6, provided that there is an additional finding by the Board of Appeals that such a change does not increase the danger of groundwater pollution from such use. Proposed extensions or alterations of commercial or industrial activities must include a site plan, as outlined below.

(2) Procedure. In addition to meeting the requirements of Section 145-69 of this chapter, the applicant must file six copies of the plan. Said application and plan shall be prepared in accordance with the data requirements of the proposed development, including but not limited to a site plan, which shall show, but not be limited to:

(a) Provisions for protection of hazardous materials from vandalism.

(b) Provisions for the prevention of corrosion and leakage of containers storing hazardous materials.

(c) Provisions for the indoor storage of all hazardous materials.

(d) Provisions for impervious floor surfaces with no interior drain.

(e) Provisions to prevent hazardous materials spillage outside.

(f) Provisions for storage of accumulated waste.

(g) Provisions for the immediate containment and cleanup of any hazardous spills.

(3) Procedures for special permit in the Aquifer Protection District.

(a) The Zoning Board of Appeals (ZBA) shall refer copies of the application to the Board of Health, Planning Board, Conservation Commission and the Town Engineer, who shall review the application either separately or jointly and shall submit their recommendations and comments to the ZBA. Failure of the boards/departments to make recommendations within 35 days of the referral of the application shall be deemed a lack of opposition.

(b) After notice and public hearing, and after due consideration of the reports and recommendations of the boards/departments, the ZBA may grant such a special permit, provided that it finds that the proposed use:

[1] Is in harmony with the purpose and intent of this chapter and will promote the purposes of the Aquifer Protection District.

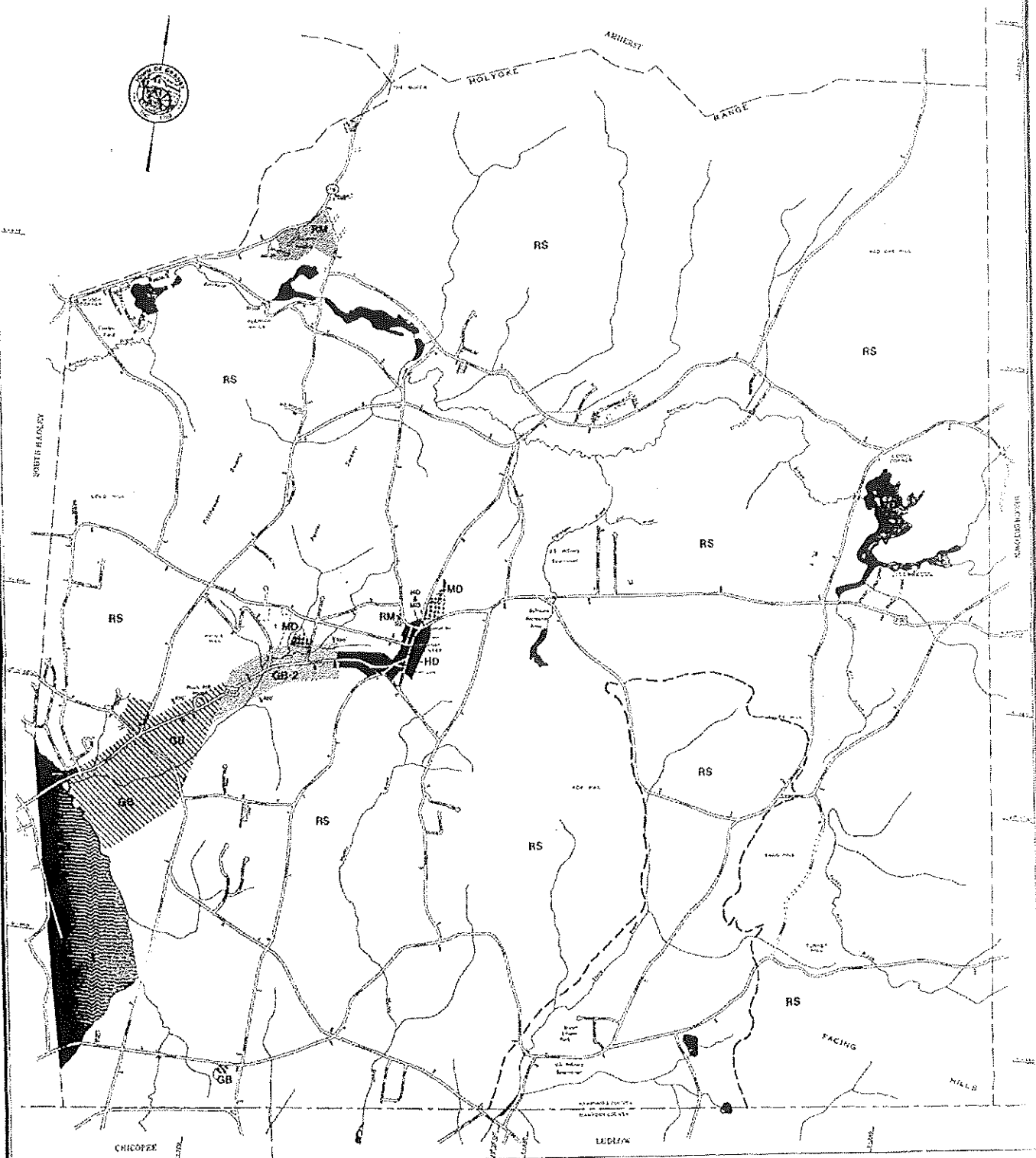
[2] Is appropriate to the natural topography, soils and other characteristics of the site to be developed.

[3] Has adequate public sewerage and water facilities or the suitable soil for on-lot sewerage and water systems.

[4] Will not, during construction or thereafter, have an adverse environmental impact on groundwater resources in the district.

[5] Will not adversely affect the existing or potential quality and quantity of water in the Aquifer Protection District. [3]

# OFFICIAL ZONING MAP



PLANNING DEPARTMENT, 100 SOUTH HADLEY STREET, GRANBY, MASSACHUSETTS 01534  
 DIVISION OF PLANNING AND ZONING  
 GRANBY, MASSACHUSETTS  
 1991

AMENDED AND APPROVED BY ATTORNEY GENERAL  
 FEBRUARY 6, 1991

SCALE



## LEGEND

RS	SINGLE FAMILY RESIDENTIAL DISTRICT	MD	MUNICIPAL DISTRICT
RM	RESIDENTIAL MEDIUM DENSITY DISTRICT	HD	HISTORIC DISTRICT
GB	GENERAL BUSINESS DISTRICT	WSP	WATER SUPPLY PROTECTION DISTRICT
GB-2	GENERAL BUSINESS DISTRICT 2		

TOWN OF  
**GRANBY**  
 MASSACHUSETTS

PREPARED FOR  
 GRANBY PLANNING BOARD  
 100 SOUTH HADLEY STREET, GRANBY, MASSACHUSETTS 01534

DESIGNED BY P. R. K. K. K.

LEVERETT ZONING BY-LAWS - TITLE PAGE  
FRANKLIN COUNTY  
LEVERETT ZONING BY-LAWS

April 27, 1991  
approved by Attorney General October 1, 1991  
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LEVERETT ZONING BY-LAW

LEVERETT ZONING BY-LAWS - TABLE OF CONTENTS  
FRANKLIN COUNTY  
LEVERETT ZONING BY-LAWS

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LEVERETT ZONING BY-LAWS - ARTICLE IV SPECIAL REGULATIONS  
FRANKLIN COUNTY  
LEVERETT ZONING BY-LAWS

ARTICLE IV. SPECIAL REGULATIONS.

4100. Campers and Campgrounds.

4110. Campers. Campers may be occupied either in a campground, or by non-paying guests accessory to a residence for up to 30 days in any calendar year. Campers may be stored accessory to a residence.

4120. Campgrounds. Campgrounds are allowed only on special permit from the Board of Appeals, and following approval from the Board of Health, and shall conform to the following minimum requirements:

4121. Parcel minimum area to be twenty (20) acres.

4122. Each rental plot shall be at least 5,000 sq. ft. and not more than 50 plots shall be allowed per campground.

4123. Campers shall not be placed within 80 feet of a street or a lot line.

4124. Site plan approval shall be obtained from the Planning Board.

4200. Earth Removal. The removal from any premises of more than 50 cubic yards of sand, gravel, stone, topsoil, loam, or similar materials within any twelve-month period shall be allowed only on special permit from the Board of Appeals, unless such removal is incidental to construction on the premises under a current building permit, or routine to farming operations and non-commercial. A special permit shall be granted subject to the following conditions, and subject to the special permit criteria of Section 5300, below.

4210. Plan. The application shall be accompanied by a plan or plans indicating existing topography, base grades below which no excavation will take place, existing and proposed cover vegetation, and proposed topography upon completion.

4220. Screening and Noise. Excavation areas and processing equipment shall be screened by buffer strips or other means, and noise and dust shall be controlled to meet the requirements of Section 3420.

4230. Restoration. Following removal, all excavated areas shall be restored by grading to provide for drainage and for slopes not to exceed one foot vertical to two feet

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horizontal, and by covering with four inches of topsoil, and by planting with cover vegetation, all of which shall have been established prior to release of the bond.

4240. Bond. A performance bond shall be posted in an amount sufficient to assure satisfactory fulfillment of all of the above requirements.

4300. Aquifer Protection District.

4310. Purpose. The purpose of the Aquifer Protection District is to protect the public health by preventing contamination of the ground and surface water resources providing existing or potential public water supply, as may be contained within the aquifer recharge areas within the town.

4320. Establishment of Districts. The Aquifer Protection Districts are herein established as overlay districts. The Aquifer Protection Districts include aquifer recharge areas, as identified on the map entitled "Aquifer Protection District Overlay," Leverett, Mass., January



1987. The map is hereby made a part of this Zoning By-Law and is on file in the office of the Town Clerk.

4321. Where a portion of the lot is located partially within and partially without an Aquifer Protection District, site design shall, to the extent feasible, locate potential pollution sources outside the district boundaries. If any portion of a proposed residential building lot lies within an Aquifer Protection District, the entire lot shall be subject to the dimensional requirements and restrictions of the Aquifer Protection District, unless a special permit is issued by the Board of Appeals in accordance with Section 4380, herein. Notwithstanding the foregoing to the contrary, the lot shall not be subject to the dimensional requirements and restrictions of the Aquifer Protection District if (a) the portion of the lot that is entirely out of the Aquifer Protection District is shown on a recordable plan as complying with the Dimensional Schedule for the underlying District and (b) it is indicated on the plan that no structure shall be erected in the portion of the lot in the Aquifer Protection District (Amended 3/28/98).

4322. Where the boundaries of the Aquifer Protection District are in doubt or dispute, the burden of proof shall be upon the owner of the land in question to show where the boundaries shall be properly located. Resolution of boundary disputes shall be through a finding made by the Planning Board. Any application for a finding under this subsection 4322 shall be accompanied by documentation prepared by a person who meets the following two requirements:

1. Is experienced in delineating hydrogeologic zones in Massachusetts, and
2. Has one of the following credentials:

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TITLE	CONFERRING ENTITY
Registered Professional Hydrogeologist	American Institute of Hydrology
Certified Professional Geologic Scientist	American Institute of Professional Geological Scientists
Registered Professional Engineer, Sanitary	Commonwealth of Massachusetts
Certified Ground Water Professional	Association of Ground Water Scientists and Engineers
Certified Professional Soil Scientist	American Registry of Certified Professionals in Agronomy, Crops, and Soils, Ltd.

The Planning Board may require the applicant, in making the determination of the location and extent of aquifer recharge areas (where such are in doubt or dispute), to conduct such field tests, at the applicant's expense, including core samples of the soil, as may be reasonably necessary.

4330. Use Regulations.

4341. Within an Aquifer Protection District, the requirements of the underlying districts continue to apply, except that uses are prohibited where indicated by "N" in the following schedule, and require a Special Permit where indicated by "SP", even where the underlying district requirements are more permissive. Uses permitted in the underlying districts are otherwise allowed in an Aquifer Protection District.

SCHEDULE

1. PRINCIPAL USES

- (a) Manufacture, use, storage, transport,  
or disposal of more than 5 gallons  
or 5 lbs. of hazardous materials  
per year ..... N

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- (b) Sanitary landfill, solid waste disposal  
(except stump and brush disposal) ..... N
- (c) Septage lagoon ..... N
- (d) Road salt stockpile ..... N
- (e) Junkyard, salvage yard, truck terminal,  
or school bus parking facility with  
more than 10 parking spaces, railroad  
transfer station ..... N
- (f) Gasoline station, car wash, auto repair  
or auto body shop ..... N
- (g) Residential, commercial, or industrial  
structure on a lot with less than 120,000  
sq. ft., or with less than 300 ft.  
frontage (except rear lot) ..... N
- (h) Wood preserving and furniture stripping  
operations ..... N

2. ACCESSORY USES

- (a) Underground storage or transmission of  
hazardous materials, including fuel oil and  
gasoline ..... N
- (b) Aboveground storage of hazardous materials in  
quantities greater than 5 lbs. or 5 gallons,  
except storage of fuel oil for residential  
accessory use ..... SP
- (c) Any use generating hazardous wastes in  
quantities greater than 5 gallons or 5 lbs. .... SP
- (d) Animal feedlots, manure storage, pesticide  
storage ..... SP

3. OTHER USES

- (a) Rendering impervious more than 20 percent  
of total lot area, regardless of size ..... N
- (b) Any use, regardless of lot size retaining  
less than 60 percent of lot area in its  
natural vegetative state ..... SP
- (c) Removal of earth, loam, sand, and gravel,  
or any other mineral, in excess of 10 yards,  
not incidental to construction of a building ..... SP

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- (d) Any use having on-site disposal system for  
domestic wastes with a design capacity  
greater than 2500 gallons per day, as

required by 310 CMR 15.00 ....

SP

4340. Special Permit Granting Authority. The Special Permit Granting Authority (SPGA) shall be the Board of Appeals. Such Special Permit may be granted if the SPGA determines that the intent of this Section 4300, as well as the specific criteria of Section 4360 are met. In making such determination, the SPGA shall give consideration to the simplicity, reliability, and feasibility of the control measures proposed and the degree of threat to groundwater quality which would result if the control measures failed. Any Special Permit required under this Section 4300 shall be in addition to, and separate from, any other Special Permit required under any section of this Zoning By-Law.

4350. Procedure. Applicants shall file six (6) copies of applications for Special Permits with the Board of Appeals. Whenever an application for a Special Permit is filed with the Board of Appeals under Section 4340, the Board of Appeals shall transmit within 10 working days of the filing of the completed application, copies of the application and other documentation, to the Board of Health, Planning Board, Conservation Commission, and the Building Inspector for their consideration, review, and report. The copies necessary to fulfill this requirement shall be furnished by the applicant. Failure of these reviewing parties to make recommendations within 35 days after having received copies of all such required materials shall be deemed a lack of opposition thereto. The Decision/Findings of the Board of Appeals shall contain, in writing, an explanation for any departures from the recommendations of any reviewing party.

4360. Special Permit Criteria. Special Permits hereunder shall be granted only if the SPGA determines (without application of Section 5330), after reviewing the recommendations of the reviewing parties delineated in Section 4350, that the proposed use:

4361. Is in harmony with the purpose and intent of this by-law and will promote the purpose of the Aquifer Protection District;

4362. Is appropriate to the existing topography, soils, and other natural characteristics of the site to be developed;

4363. Is adequately provided with sewage and water

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facilities or possesses suitable soils for on-site wastewater disposal and water systems;

4364. Will not have an adverse environmental impact on any watershed, watercourse, or water body in the district, during construction or thereafter;

4365. Will not result in groundwater quality below the more restrictive of federal or state standards for drinking water, or, if existing groundwater quality is already below those standards, on-site disposal or operations will result in no further deterioration.

4370. Submittals. In applying for a Special Permit hereunder, the SPGA shall require the information listed below, unless waived or modified by the SPGA, with reasons therefor. An application shall not be deemed filed until all required information is filed with the Board of Appeals.

4371. A description of soil erosion and sedimentation control measures; provisions to prevent soil compaction; provisions to prevent seepage from septic systems or from interior floor surfaces.

4372. A complete list of all chemicals, pesticides, fuels, or other potentially hazardous materials to be used or stored on the premises in quantities greater than 5 gallons or 5 lbs. accompanied by a description of the measures proposed to protect all storage containers from vandalism, corrosion, and leakage, and to provide for control of spills.

4373. A description of all potentially hazardous wastes to be generated in quantities greater than 5 gallons or 5 lbs., accompanied by a description of the measures proposed to protect all waste storage facilities from vandalism, corrosion, and leakage, and to provide for control of spills.

4374. For aboveground storage of hazardous materials or waste, certification by a Registered Professional Engineer that such storage facilities or containers are (i) in compliance with all applicable federal or state regulations, and (ii) in compliance with design specifications, as prepared by a Registered Professional Engineer.

4375. For any proposed activity on a lot which will render more than 20 percent of the total lot area impervious, the application shall be accompanied by drainage calculations, prepared by a Registered Professional Engineer, demonstrating that any increase

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in the volume of runoff shall be recharged on-site and diverted towards areas with vegetation for surface infiltration to the maximum extent feasible. The plan shall be accompanied by a narrative statement explaining the use of any dry wells, which shall be allowed only upon a showing that other methods of drainage are infeasible, and that such dry wells are preceded by oil, grease, and sediment traps to facilitate removal of contaminants.

4376. For any use retaining less than 60 percent of lot area in its natural vegetative state, the application shall be accompanied by evidence, prepared by a Registered Professional Engineer, to demonstrate that such removal of vegetative cover shall not result in decreased recharge of the groundwater deposit, or increased sedimentation of surface waters. The application shall also indicate proposed restoration plans, if any, or erosion control methods proposed for the premises.

4377. For any use with an on-site disposal system for domestic wastes with a design capacity of greater than 2,500 gpd, as required by 310 CMR 15.00, certification by a Registered Professional Engineer that the disposal system has been installed in compliance with design specifications, accompanied by a narrative statement assessing the impact, if any, of nitrates, coliform bacteria, and hazardous materials from the disposal system on any wells downgradient from the proposed disposal system.

4378. Applications for removal of earth, loam, sand, and gravel, or any other mineral in excess of ten cubic yards, shall be accompanied by a narrative statement, prepared by a Registered Professional Engineer, assessing the impact, if any, of the proposed activity on groundwater quality downgradient to any well. No excavation or removal shall be conducted within ten (10) feet of the seasonal high water table on the property in question.

4379. Applications for animal feedlots or manure lots shall be accompanied by certification, prepared by the Soil Conservation Service, or the Agricultural Stabilization and Conservation Service, that the proposed use is in accordance with the Best Management Practices of that agency.

4380. Special Permits for Dimensional Restrictions for Residential Lots. Any residential building lot lying partially within and partially without the Aquifer

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Protection District may apply for a special permit to waive application of the more stringent dimensional requirements of this Section 4300. The SPGA may grant such special permit (without application of Section 5330), only upon a determination that the residential construction will not increase ground or surface water pollution. In making such determination, the SPGA shall consider the following factors:

4381. The use of the lot, the type and nature of proposed structures), pollution sources to be placed thereon (including wastewater disposal);

4382. The use of adjacent lots, type and nature of pollution sources thereon (including wastewater disposal);

4383. The location of any wells or other domestic water supplies on the lot or an adjacent lot;

4384. The percentage of the lot within the Aquifer Protection District;

4385. The density of the surrounding area;

4386. The topographical and geological features of the lot;

4387. The extent to which structures and potential pollution sources will be located on the lot without the Aquifer Protection District.

4390. Nonconforming Uses. Any nonconforming use may continue in the Aquifer Protection District, pursuant to G.L. c. 40A, s. 6, and may be extended, altered, or changed provided that the Board of Appeals, as a part of the finding or special permit decision required, determines that such extension, alteration, or change will not increase the danger of groundwater pollution from the premises.

4400. Flood Hazard District.

4410. Purpose. The Flood Hazard District is established to protect the public health, safety, and general welfare, to protect human life and property from the hazards of periodic flooding, to preserve natural flood control characteristics and flood storage capacity of the flood plain, and to preserve and maintain the ground water table and water recharge areas within the flood plain.

4420. Establishment of Districts. The Flood Hazard District is herein established as an overlay district.

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The boundaries of the Flood Hazard District are defined as:

4421. All areas delineated on the Leverett Flood Insurance Rate Map (FIRM), dated June 4, 1980, as Zones A, A-1, A-2, and A-3 to indicate the 100 year flood plain. The boundary of the 100 year flood plain is further defined by the Flood Profiles contained in the Flood Insurance Study, dated November 1979, herein incorporated into this by-law by reference; and

4422. All areas delineated on the Leverett Flood Boundary Floodway Map (FBFM), dated June 4, 1980, and further defined by the Floodway Data Tables contained in the Flood Insurance Study.

4423. Within Zone A, where the 100 year flood elevation is not provided on the FIRM, the applicant shall obtain any existing flood elevation data and provide such data to the Board of Appeals for review. If the Board of Appeals deems such data to be accurate, it may be relied upon for purposes of this by-law and the State Building Code.

4430. Use Regulations.

4341. Within a Flood Hazard District, the requirements of the underlying districts continue to apply, except that uses are prohibited where indicated by "N" in the following schedule, and require a Special Permit where indicated by "SP", even where the underlying district requirements are more permissive. Uses permitted in the underlying districts are otherwise allowed in a Flood Hazard District.

#### SCHEDULE

- (a) Temporary non-residential structures used in connection with growing, harvesting, storage, or sale of crops raised on the premises ..... Y
- (b) Construction, reconstruction, or creation of any structure or building; dumping, filling, excavating, transferring, or altering (in any way) the natural topography of the land, except as provided in (d), below .... SP
- (c) Expansion, alteration, or change to a lawfully existing nonconforming structure .... SP

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- (d) Agriculture, silviculture, viticulture, floriculture and horticulture, without construction of structures, placement of fill, or storage of equipment .... Y
- (e) Outdoor public recreation areas, conservation areas, wildlife management, without construction of structures, placement of fill, or storage of equipment ..... Y

4440. Special Permit Granting Authority. The Special Permit Granting Authority (SPGA) shall be the Board of Appeals. Such Special Permit may be granted if the SPGA determines that the intent of this Section 4400, as well as the specific criteria of Section 4460 are met. In making such determination, the SPGA shall give consideration to the simplicity, reliability, and feasibility of the control measures proposed and the degree to which allowance of the use would increase flood levels during the occurrence of the 100 year flood. Any Special Permit required under this Section 4400 shall be in addition to, and separate from, any other Special Permit required under any section of this Zoning By-Law.

4450. Procedure. Applicants shall file six (6) copies of applications for Special Permits with the Board of Appeals. Whenever an application for a Special Permit is filed with the Board of Appeals under Section 4340, the Board of Appeals shall transmit within 10 working days of the filing of the completed application, copies of the application and other documentation, to the Board of Health, Planning Board, Conservation Commission, and the Building Inspector for their consideration, review, and report. The copies necessary to fulfill this requirement shall be furnished by the applicant. Failure of these reviewing parties to make recommendations within 35 days after having received copies of all such required materials shall be deemed a lack of opposition thereto. The Decision/Findings of the Board of Appeals shall contain, in writing, an explanation for any departures from the recommendations of any reviewing party.

4460. Special Permit Criteria. Special Permits hereunder shall be granted only if the SPGA determines (without application of Section 5330), after reviewing the recommendations of the reviewing parties delineated in Section 4450, that the proposed use:

4461: Complies in all respects with the requirements of the underlying district in which the land is located;

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4462. Via encroachments, including fill, new construction, substantial extension, alteration or change to existing structures, and other activities will not result in any increase in flood levels during the occurrence of the 100 year flood.

4500. Stream and Lake Protection District.

4510. Purpose. This overlay district is established to ensure that lands

near flowing streams and standing open water bodies shall not be used in such a manner as to endanger the health or safety of Leverett residents.

4520. Applicability. The following areas shall be included in the Stream and Lake Protection District:

4521. Land lying within a horizontal distance of one hundred (100) feet on each side of the bank and/or edge of each and every "Major Stream" in the Town of Leverett, as shown on the "Stream and Lake Protection District Map, Town of Leverett, 1990", hereby appended to and made a part of this by-law.

4522. Land lying within a horizontal distance of fifty (50) feet on each side of the bank and/or edge of each and every "Minor Stream" in the Town of Leverett, as shown on the "Stream and Lake Protection District Map, Town of Leverett, 1990", hereby appended to and made a part of this by-law.

4523. All land that lies within a horizontal distance of one hundred (100) feet from the normal highwater line of all standing open bodies of water shown on the "Stream and Lake Protection District Map, Town of Leverett, 1990", hereby appended to and made a part of this by-law.

4254. "Major Streams" are those streams shown as bold lines on the aforesaid map. "Minor Streams" are all streams shown on the aforesaid map and not shown by a bold line (Added 3/28/98).

4530. Restrictions. The Stream and Lake Protection District shall be considered an overlay district. Land lying within a Stream and Lake Protection District may be used for any purpose otherwise permitted in the underlying zoning district, with the following exceptions:

4531. No septic tank or septic tank leach field or other component of an individual wastewater disposal system shall be constructed within the district;

4532. No dumping, filling, dredging, excavation, transfer or removal of any material which will alter the natural flood water storage capacity of the land,

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interfere with the natural flow of the water over the land, or increase stream bank erosion shall be permitted except by a written order of conditions from the Leverett Conservation Commission;

4533. No building or structure shall be erected in this district without the issuance of a special permit from the Board of Appeals.

4540. Special Permits. The Board of Appeals may grant a special permit for a building or structure provided that all of the following conditions have been satisfied. Section 5330 shall not be applicable to such special permit applications.

4541. The building or structure is not intended for and shall not be used for human residence;

4542. The construction of the building or structure will not:

a. substantially interfere with the natural flow of water off of the premises; and,

b. constitute a danger to the public safety or health.

4600. Scenic Roads Protection.

4610. Purpose and Applicability. Pursuant to G.L. c. 40, s. 15C, the Town of Leverett has designated all public ways as Scenic Roads. Designation as a Scenic Road allows the town to preserve the qualities and character of town ways. It is the intent of this by-law to further

that purpose.

4620. Requirements. Any repair, maintenance, construction, reconstruction, or paving work done with respect to a Scenic Road shall not involve or include the cutting or removal of trees of more than 10" dbh (diameter/breast height), or the tearing down or destruction of stone walls, or portions thereof, except with the prior written consent of the Planning Board. The Planning Board will hold a hearing pursuant to G.L. c. 40, s. 15C on such application.

4630. Decision. The Planning Board shall consider the following criteria in reviewing applications under this Section 4600:

4631. Public safety;

4632. Enhancement of scenic views along the roadway;

4633. Preservation of historic and other existing features;

4634. Preservation of the natural environment.

4640. Regulations. The Planning Board may adopt reasonable regulations for the administration of this by-law.

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4700. Rattlesnake Gutter Overlay District:

4710. Purpose. It is the intent of this Section 4700 to protect the natural, geological and historic character of the Rattlesnake Gutter Overlay District, while providing for reasonable use of private land.

4720. Establishment of District. The Rattlesnake Gutter Overlay District is herein established as an overlay district. The Rattlesnake Gutter Overlay District includes all land set back one thousand feet on both the north and south sides of Rattlesnake Gutter Road, as measured from the centerline of the traveled portion of the way, situated between the Sawmill Rive on the east and the stone bridge running under Rattlesnake Gutter Road on the west, near the intersection of Old Cave Hill Road and Rattlesnake Gutter Road, all approximately as shown on a map entitled "Rattlesnake Gutter Overlay District, Town of Leverett, MA March 1998", hereby appended to and made a part of this by-law.

4721. Where the boundaries of the Rattlesnake Gutter Overlay District are in doubt or dispute, the burden of proof shall be upon the owner of the land in question to show where the boundaries shall be properly located.

4730. Use Regulations. Within the Rattlesnake Gutter Overlay District, the requirements of the underlying continue to apply, except that the following regulations shall supersede otherwise applicable requirements:

4731. Setbacks. No structure shall be permitted within 500 feet of the centerline of the traveled portion of Rattlesnake Gutter Road. Where a structure is proposed on a lot in existence as of March 2, 1998 which cannot meet this requirement because of size or shape, the structure shall be located at the most distant feasible development site from Rattlesnake Gutter Road, as determined by the Planning Board in accordance with section 4740, below.

4732. Buffer Zone. No live vegetation shall be removed, nor shall excavation occur, within 250 feet of the centerline of the traveled portion of Rattlesnake Gutter Road, or within two-thirds the distance between any structure and the front line on Rattlesnake Gutter Road, whichever is lessor. The provisions of the prior sentence shall not apply to (a) the cutting of cordwood for the personal use of the lot owner, or (b) the harvesting of trees in accordance with cutting plans in conformity with all applicable.



Massachusetts forestry regulations and also approved by the Planning Board prior to any such cutting or (c) the construction of a driveway or the installation of utilities. Notwithstanding the first sentence of this paragraph to the contrary, the owner of any lot existing as of March 18, 1998 which is at least five (5) acres and which is primarily devoted to the production of forest products for which a Forest Cutting Plan (M.G.L. Ch. 132 S40.-46) has been filed with and approved by the State Department of Environmental Management may harvest wood in accordance with such plan. Notwithstanding the foregoing to the contrary, in the event of a natural disaster or other event threatening the public safety, cutting or removal of live vegetation within the Buffer Zone may occur, after determination of such emergency by the Selectboard, but only to the extent deemed necessary by the Selectboard or their agent.

4740. Site Plan Review. Applications for building permits or special permits within the Rattlesnake Gutter Overlay District shall be accompanied by four (4) copies of a site plan in accordance with the criteria specified below. The Building Inspector or the special permit granting authority shall forthwith forward such site plans to the Planning Board. Where applicable, the requirements of Section 3900 remain in full force and effect, in addition to these requirements under Section 4700. The Planning Board shall consolidate site plan review in such cases.

4741. Procedure. Site plans accompanying applications for building permits or site plans accompanying applications for special permits shall be processed in accordance with the specifications of Section 3910, above.

4742. Plans: Plans subject to this section shall show:

a. Existing and proposed topography at 10 foot or 3 meter contour intervals for purposes of this subsection a USGS (United States Geological Services) Map with a 1:24,000 or 1:25,000 scale is acceptable;

b. All boundary line information pertaining to the land sufficient to permit location of same on ground, including the location of the frontage for the lot;

c. Location and height of the proposed structure(s); photographs or renderings of the elevation of the proposed structure(s) and any alterations;

d. Parking, access, and egress provisions;

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e. Location of existing stonewalls, large trees, and wooded areas, and proposed removal or retention of same;

f. Compliance with all applicable provisions of this Zoning By-Law.

Site plans shall be submitted on 24-inch by 36-inch sheets. Dimensions and scales shall be adequate to determine that all requirements are met and to make a complete analysis and evaluation of the proposal. All plans shall have a minimum scale of 1"=200'.

4743. Decision. Site plan approval shall be granted upon determination by the Planning Board that the development complies, to the maximum extent feasible, with the following criteria and standards. The Planning Board may impose reasonable conditions, even at the expense of the applicant, to ensure that the criteria and standards have been satisfied. Except where the applicant has removed, or caused to be removed, mature trees from the site, whether pursuant to 304 CMR 11.00 or not, the Planning Board shall not require the planting of mature trees as a condition of site plan approval. New building construction or other site alteration shall be designed in the site plan, after

considering the qualities of the specific location, the proposed land use, the design building form, grading, egress points, and other aspects of the development, so as to:

- a. Minimize the number of removed trees 6" caliper or larger and the length of removed stone walls;
- b. Minimize disruption of scenic views from publicly accessible locations;
- c. Minimize visual intrusion by controlling the visibility of the principal and accessory structures, parking, storage, or other outdoor service areas as viewed from public ways;

4744. Regulations. The Planning Board may adopt and from time to time amend reasonable regulations for the administration of these site plan guidelines.

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3/28/98

#### 4800. Flexible Development.

4810. Purpose. The purpose of this Section 4800, Flexible Development, is to encourage the preservation of open land for its scenic beauty and to enhance agricultural, open space, forestry, and recreational use; to preserve historical and archeological resources; to protect the natural environment; to protect the value of real property; to promote more sensitive siting of buildings and better overall site planning; to perpetuate the appearance of Leverett's traditional New England landscape; to allow landowners a reasonable return on their investment; to facilitate the construction and maintenance of streets, utilities, and public services in a more economical and efficient manner; and to promote the development of housing affordable to low and moderate income families.

4820. Applicability. Any creation of seven (7) or more lots, whether a subdivision or not, from a parcel or set of contiguous parcels held in common ownership, may proceed under this Section 4800, Flexible Development, pursuant to the issuance of a special permit, as indicated in Section 2230, the Use Regulation Schedule. Such Special Permits shall be acted upon in accordance with the following provisions. In addition, smaller developments may, at the owner's option, be considered as if a Flexible Development, and employ the following provisions, but shall not be eligible for density bonus units as set forth in Section 4852.

4830. Procedures. Applicants for Flexible Development shall file with the Planning Board six (6) copies of the following. The required submittals shall be in addition to any other requirements of the Subdivision Control Law or any other provisions of this Zoning By-Law.

4831. A Development Plan conforming to the requirements for a preliminary subdivision plan under the Subdivision Regulations of the Planning Board. Such plan shall also indicate proposed topography, wetlands, and, unless the development is to be sewer, the results of deep soil test pits and percolation tests at the rate of one per every two acres, but in no case fewer than two per Flexible Development. Where wetland delineation is in doubt or dispute, the Planning Board may require the applicant to submit a request for determination of wetlands to the Conservation Commission. The Planning Board shall refer data on wastewater disposal to the Board of Health for their review and recommendation.

4832. An Environmental Analysis, if required by the Subdivision Regulations.

4833. Any additional information required by the Planning Board to make the determinations and assessments cited in Sections 4840 and 4850, below.

4840. Modification of Lot Requirements. The Planning Board may authorize modification of lot size, shape, and other bulk requirements for lots within a Flexible Development, subject to the following limitations:

4841. Lots having reduced area or frontage shall not have frontage on a street other than a street created by a subdivision involved.

4842. Each lot shall contain not less than one-half of the area required in the district in which the lot is located, and have frontage of not less than 100 feet. Each lot shall have at least 50% of the required yards in the district in which it is located, and may exceed lot coverage requirements by 50%.

4843. Any proposed open land, unless conveyed to the Town or its Conservation Commission, shall be covered by a recorded restriction enforceable by the Town, providing that such land shall be kept in an open state, or that it shall be preserved for exclusively agricultural purposes. Any such land proposed as open land shall be served by suitable access for purposes of recreational use, forest management, or agricultural cultivation.

4850. Number of Dwelling Units.

4851. The Basic Maximum number of dwelling units allowed shall be limited to the number of single family dwelling units that could be constructed in an orthodox subdivision on the site in full conformance with all zoning, subdivision, and other applicable state and local regulations, and without the proposal of extraordinary engineering measures. Where the Basic Maximum Number is in doubt or dispute, the determination of the Planning Board (and its consulting engineer) shall be conclusive for all purposes.

4852. The Planning Board may approve a Flexible Development containing more than the Basic Maximum number of dwelling units, upon the condition that any increase shall be limited by the following:

a) one additional dwelling unit or lot may be added for each dwelling unit that is made available for a minimum of twenty (20) years via sale, lease, or deed restrictions to persons or families qualifying as low or moderate income as defined by the Executive Office of Communities and Development of the Commonwealth.

Page 43

b) The total number of additional units to be constructed under sections 4851 and 4852, above, shall not exceed 15% of the Basic Maximum number of dwelling units. Where a fraction of a dwelling unit results in the computation, any fraction larger than 0.5 dwelling unit shall be rounded to the higher figure.

c) No bonus development units shall be allowed in an Aquifer Protection District.

4860. Design of Development.

4861. Departure from the visual scale of single-family development shall be minimized through including not more than 2 dwelling units in a single structure.

4862. Parking areas shall not be located within a required front yard or within ten feet of a lot line. Parking areas shall be screened from public ways by building location, grading, fencing, or plantings. No individual parking area shall contain more than 10 spaces.

4863. No building shall be floodlit. Drives and parking areas shall be illuminated only by shielded lights not higher than 15 feet.

4864. A minimum of 30% of the parcel shown on the Development Plan shall

PELHAM ZONING BY-LAWS - TITLE PAGE/CONTENTS  
HAMPSHIRE COUNTY  
TOWN OF PELHAM

TOWN OF PELHAM ZONING BYLAW

INCLUDING AMENDMENTS FROM ATM MAY 9, 1998

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Town of Pelham \* 351 Amherst Road, Pelham, MA 01002-9714 \* 413/253-7129

PELHAM ZONING BYLAW 10/24/89 AND SUBSEQUENT AMENDMENTS 5/4/91; 10/27/93;

5/11/96 (This Bylaw replaces that of ATM 1969 and amendments up to and including ATM 1988)

PELHAM ZONING BY-LAWS - SECTION IV OVERLAY DISTRICT REGULATIONS  
HAMPSHIRE COUNTY  
TOWN OF PELHAM

SECTION IV - OVERLAY DISTRICT REGULATIONS

4.01 WATER SUPPLY PROTECTION DISTRICT (10/27/93; AG Approval 1/7/94)

4.01.01 Purpose

To promote the health, safety and welfare of the community by protecting, preserving and maintaining the surface and groundwater resources of the Town and the region from any use of land or buildings which may pollute or otherwise adversely affect the quality and quantity of its water resources.

4.01.02 Scope of Authority

The Water Supply Protection District is an overlay district and shall be superimposed on the other districts established by the Bylaw. All uses, dimensional requirements and other provisions of the Town of Pelham Zoning Bylaw applicable to such underlying districts shall remain in force and effect, except that where the Water Supply Protection District imposes greater or additional restrictions and requirements, such restrictions or requirements shall prevail. Any uses not permitted in underlying districts shall remain prohibited.

4.01.03 District Delineation

A Water Supply Protection District is herein established to include all lands within the Town of Pelham.

a. The intent of the Water Supply Protection District is to include lands within the watersheds of surface water supplies and lands lying within the recharge areas of groundwater aquifers, including lands which recharge public and private wells. The map entitled "Surface and Groundwater Resources in the Town of Pelham", on file with the Office of the Town Clerk, illustrates that these lands encompass the entire Town.

Pelham Zoning Bylaw

Page 8.

b. Where the boundaries delineated are in doubt or in dispute, the burden of proof shall be upon the owner(s) of the land in question to show where they should be properly located. At the request of the owner(s) the Town may engage a professional hydrologist to determine more accurately the location and extent of an aquifer or primary recharge area, and may charge the owner(s) for all or part of the cost of the investigation.

4.01.04 Prohibited Uses

The following uses as well as all others not specifically permitted, are prohibited as principal or accessory uses in the Water Supply Protection District:

a. Business and industrial uses, not agricultural, including but not limited to metal plating, chemical manufacturing, wood preserving, furniture stripping, dry cleaning, and auto body repair, that generate, treat, process, store or dispose of hazardous wastes, except for the following:

(1) very small quantity generators of hazardous waste, as defined by 310 CMR 30.00, that generate less than 20 kilograms or 6 gallons of hazardous waste per month may be allowed by Special Permit from the Zoning Board of Appeals, in accordance with Section 7.03 of this bylaw;

(2) household hazardous waste collection centers or events operated pursuant to 310 CMR 30.390;

(3) waste oil retention facilities' required by M.G.L. C.21, s.52A and;

(4) treatment works approved by Mass. Department of Environmental Protection and designed in accordance with 314 CMR 5.00 for the treatment of contaminated ground or surface waters.

b. Business or industrial uses, not agricultural, which dispose of process wastewaters on-site.

c. trucking terminals, bus terminals, car washes, motor vehicle gasoline sales, automotive service and repair shops, commercial fuel oil storage and sales.

d. Solid waste landfills, dumps, auto recycling, auto graveyards, junk and salvage yards, landfilling or storage of sludge and septage, with the exception of the disposal of brush and stumps, and composting of organic plant and vegetable matter.

e. Storage of liquid petroleum products, not including liquefied petroleum gas, except for the following.

(1) Storage which is incidental to:

(a) normal household \*commercial, agricultural, or Town of Pelham municipal use, including the maintenance or the heating of a structure;  
\*STM Floor Amendment

(b) waste oil retention facilities required by Mass. General Laws C.21, Section 52A;

(c) emergency generators required by statute, rule or regulation, or;

Pelham Zoning Bylaw

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(d) treatment works approved by the Mass. Department of Environmental Protection designed in accordance with 314 CMR 5.00 for the treatment of contaminated ground or surface waters; provided that storage, listed in items 4.01.04-e-(1)(a-b) above, shall be in a free standing above-ground container within a structure or within the basement of a structure, and new structures shall include at a minimum a foundation with a poured cement slab floor or a concrete reservoir of sufficient volume to contain a spill the size of the container's total storage capacity. The storage tank and piping must comply with all applicable provisions of 527 CMR 9.00 Massachusetts Board of Fire Prevention regulations.

2 ) Replacement of storage tanks or systems for the dispensing or storing of gasoline, which existed at the time of adoption of this bylaw. provided that:

(a) all such replacement storage tanks or systems shall be located underground as required by Mass. Board of Fire Prevention regulations 527 CMR 14;

(b) all such storage systems shall be protected by one of the secondary containment systems specified in Mass. Board of Fire Prevention regulations 527 CMR 9.08(3);

(c) the head of the Fire Department may deny an application for tank replacement, or approve it subject to conditions if he or she determines, in consultation with the Board of Health, that it constitutes a danger to public or private water supplies in accordance with 527 CMR 9.26(4)(d),

(d) any storage tank which is removed and not replaced must have the tank fill pipe removed at the same time. Replacement of all other storage tanks for liquid petroleum products other than gasoline must be above ground in accordance with section 4.01.04-e-(1) above.

f. Outdoor storage of salt, de-icing materials, pesticides or herbicides.

g. Dumping or disposal on the ground, in water bodies, or in residential septic systems of any toxic chemical, including but not limited to septic system cleaners which contain toxic chemicals such as methylene chloride and 1-1-1 trichlorethane, or other household hazardous wastes. (See list of prohibited chemicals at Board of Health or Town Clerk's office).

h. Stockpiling and bulk disposal of snow or ice removed from highways and streets located outside of the Water Supply Protection District that contains sodium chloride, calcium chloride, chemically treated abrasives or other chemicals used for snow and ice removal;

i. Wastewater treatment works subject to 314 CMR 5.00 (any treatment works which discharge contaminants to the ground, except sanitary discharges less than 15,000 gallons per day which are in compliance with Title V) except the following:

(1) the replacement or repair of an existing system(s) that will not result in a design capacity greater than the design capacity of the existing system(s);

(2) the replacement of an existing subsurface sewage disposal system(s) with wastewater treatment works that will not result in a design capacity greater than the design capacity of the existing system(s); and

Pelham Zoning Bylaw

Page 10

(3) treatment works designed for the treatment of contaminated ground or surface waters;

#### 4.01.05 Restricted Uses

The following are restricted in the Water Supply Protection District:

a. Excavation for removal of earth, loam, sand, gravel and other soils or mineral substances shall not extend closer than five (5) feet above the historical high groundwater table (as determined from on-site monitoring wells and historical water table fluctuation data compiled by the United States Geological survey whichever is higher). Monitoring wells shall be installed by the property owner in advance of excavation to verify groundwater elevations. This section shall not apply to excavations incidental to permitted uses, including but not limited to providing for the installation or maintenance of structural foundations, freshwater ponds, utility conduits or on-site sewage disposal or to excavation sites less than 5 acres in size. On sites greater than 5 acres, in order to verify the changes in elevation and direction of flow through triangulation, three monitoring wells shall be installed. The Board of Selectmen shall have the option to require additional monitoring wells, as appropriate to the site. The number and location of monitoring wells shall be based upon the slope of the terrain and the size of the parcel to be developed. This provision shall be applied in conjunction with the Pelham Earth Removal Bylaw, the Pelham Wetlands Protection Bylaw, other Town Bylaws, and the Massachusetts Wetlands Protection Act (Massachusetts General Laws Chapter 131, Section 40).

(1) Access road(s) to excavation operation sites shall include a gate or other secure mechanism to restrict public access to the site.

(2) Upon completion of earth removal operations, all altered areas shall be stabilized and graded consistent with site conditions prior to initiation of work on the site, using topsoil and vegetative plantings suitable to control erosion on the site.

b. Sodium chloride for ice control shall be used at the minimum salt to sand ratio that is consistent with the public highway safety requirements, and its use shall be eliminated on roads which are closed to the public in winter.

c. The storage of sodium chloride, calcium chloride, chemically treated abrasives or other chemicals used for the removal of ice and snow on roads shall be covered and located on a paved surface with berms, or within a structure designed to prevent the generation and escape of contaminated runoff or leachate.

d. Fertilizers, pesticides, herbicides, lawn care chemicals, or other leachable materials shall be used in accordance with the Lawn Care Regulations of the Massachusetts Pesticide Board, 333 CMR 10.03 (30, 31), as amended, with manufacturer's label instructions and all other necessary precautions to minimize adverse impacts on surface and groundwater. The application of herbicides, pesticides, or fertilizers, other than amounts associated with normal household or agricultural use, shall require written permission from the Board of Health.

e. In cases where soil percolation rates are faster than two minutes per inch, additional measures, such as appropriate fill materials may be imposed by the Board of Health to slow the percolation rate for on-site sewage disposal systems. (See Board of Health Regulations).

f. The storage of fertilizers and soil conditioners for commercial use shall be within

Pelham Zoning Bylaw

Page 11

structures designed to prevent the generation and escape of contaminated runoff or leachate,

g. All new permanent animal manure storage areas shall be within a concrete manure storage pit or other suitable structure that is covered and/or contained to prevent nutrient loading due to the escape of runoff or leachate.

h. All liquid hazardous materials, as defined in M.G.L. Chapter 21E, must be stored either in a free standing container within a building, or in a free standing container above ground level with protection to contain a spill the size of the container's total storage capacity.

#### 4.01.06 Drainage

a. For commercial, institutional, and industrial uses that require a Special Permit, runoff from impervious surfaces shall be diverted to a system for groundwater recharge that does not degrade water quality. Such system may include extended time detention basins, artificial wetlands or other similar areas covered with vegetation to enhance infiltration of the runoff into the ground. Such runoff shall not be discharged directly to rivers, streams or other surface water bodies. Dry wells are permitted only where other methods are infeasible, and shall be preceded by oil, grease and sediment traps to facilitate removal of contamination. All recharge areas shall be permanently maintained in full working order by the owner(s).

#### 4.01.07 Licensing and Inspection of Petroleum Storage Tanks

a. The installation of any tank for storage of petroleum products not exclusively devoted to heating the principal structure shall require a license from the Board of Selectmen, in accordance with Massachusetts Fire Prevention Regulation, M.G.L. Chapter 14B and 527 C.M.R. 9.00;

b. All existing underground storage tanks may be subject to periodic inspections under regulations promulgated by the Board of Health. The purpose of such inspections shall be to determine whether liquids are escaping to the surrounding soil or groundwater, thereby creating a public nuisance;

c. No existing storage tank shall be continued if it is determined by the Board of Health that the contents are leaking into the soil or groundwater.

#### 4.01.08 Non-conforming Uses



Non-conforming uses which were lawfully existing, begun or in receipt of a building or special permit prior to the first publication of notice of public hearing for this Bylaw may be continued. Such non-conforming uses may be extended or altered, as specified in M.G.L. C.40a, S.6, provided that there is a finding by the Board of Appeals that such change does not increase the danger of surface or groundwater pollution from such use.

Replacement of existing non-conforming storage tanks for liquid petroleum products, located within a structure or basement of a structure, shall be permitted. Installation of a concrete foundation or reservoir around such a replacement tank is recommended, but not required.

SHUTESBURY ZONING BY-LAWS - TITLE PAGE  
FRANKLIN COUNTY  
TOWN OF SHUTESBURY

SHUTESBURY ZONING BY-LAW  
April 1997 printing

Adopted by the voters at the April 11, 1972  
adjournment of the April 4, 1972  
Special Town Meeting

Amended by the voters at the  
May 6, 1978 Town Meeting  
May 7, 1988 Town Meeting  
May 6, 1989 Town Meeting  
May 4, 1991 Town Meeting  
May 2, 1992 Town Meeting  
May 1, 1993 Town Meeting  
May 4, 1996 Town Meeting  
May 1, 1999 Town Meeting

RECEIVED AT MUNILAW AUGUST 23, 1999

A true copy, attest:  
Shutesbury To Clerk

# Town of Amherst

## Monthly Watershed Inspection for Atkins Reservoir

Inspection Date/Time: \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

The following items should be inspected and irregularities or needed actions noted below:

☐ Inspection of Town of Amherst owned parcels

Check For:

- ☐ Unauthorized Activities
- ☐ Illegal Dumping
- ☐ Obstructions to stream flow
- ☐ Presence of signage
- ☐ Encroachment by adjacent landowners
- ☐ Other maintenance needs

☐ Inspection of entire watershed

Check for evidence of illegal dumping, recreation activities, and other potentially harmful activities. (describe below if necessary)

☐ Check for wildlife activities that may be detrimental to the public water supply. (describe below if necessary)

Areas of Concern	
Property Description (Address, etc.)	Comments and Observations
Use Additional Sheets if Necessary	

# Town of Amherst

## Monthly Watershed Inspection for Pelham Reservoir System

Inspection Date/Time: \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

The following items should be inspected and irregularities or needed actions noted below:

☐ Inspection of Town of Amherst owned parcels

Check For:

- ☐ Unauthorized Activities
- ☐ Illegal Dumping
- ☐ Obstructions to stream flow
- ☐ Presence of signage
- ☐ Encroachment by adjacent landowners
- ☐ Other maintenance needs

☐ Inspection of entire watershed

Check for evidence of illegal dumping, recreation activities, and other potentially harmful activities. (describe below if necessary)

☐ Check for wildlife activities that may be detrimental to the public water supply.  
(describe below if necessary)

Areas of Concern	
Property Description (Address, etc.)	Comments and Observations
Use Additional Sheets if Necessary	

# Town of Amherst

## Monthly Watershed Inspection for Lawrence Swamp Aquifer Zone II

Inspection Date/Time: \_\_\_\_\_ Inspector Initials: \_\_\_\_\_

The following items should be inspected and irregularities or needed actions noted below:

☐ Inspection of Town of Amherst owned parcels

Check For:

- ☐ Unauthorized Activities
- ☐ Illegal Dumping
- ☐ Obstructions to stream flow
- ☐ Presence of signage
- ☐ Encroachment by adjacent landowners
- ☐ Other maintenance needs

☐ Inspection of entire watershed

Check for evidence of illegal dumping, recreation activities, and other potentially harmful activities. (describe below if necessary)

☐ Check for wildlife activities that may be detrimental to the public water supply. (describe below if necessary)

Areas of Concern	
Property Description (Address, etc.)	Comments and Observations
Use Additional Sheets if Necessary	

## Potential Threats at the Well Site

### Small Systems Checklist

In addition to potential threats posed by high risk land uses and activities in the recharge area, small water suppliers in particular need to routinely inspect for threats that occur at the well site. This component of the inventory should be conducted by the certified operator.

- ☒ Cracks in sanitary seals, grouting, casing and concrete pads
- ☒ Concrete pads that do not slope away from the well
- ☒ Unscreened openings in vents and water level ports
- ☒ Cross connections
- ☒ Vents and valves that aren't pointed to the ground
- ☒ Unprotected chemical feeders that aren't tamper proof
- ☒ Unapproved well cleaning chemicals
- ☒ Old oil-drip lubricated pumps
- ☒ Well casing that doesn't extend above ground
- ☒ Back flow prevention valves which do not operate properly

**TOWN OF AMHERST LAND OWNERSHIP MAPS, PARCELS AND  
ACQUISITION:**

**ATKINS RESERVOIR WATERSHED**

## Amherst Ownership

*The following parcels are currently owned by Amherst within the Atkins Reservoir Watershed*

Town	Map	Parcel ID	Size (Acres)
Amherst	3D	38	0.55
Shutesbury	2	T-6	22.90
Shutesbury	Various	ZT-3*	266.70
Shutesbury	1	U-3	5.20
Shutesbury	1	U-6	113.80
Shutesbury	1	U-8	13.60
Shutesbury	2	U-13	67.36
Shutesbury	1,2	U-26	9.12
Shutesbury	2	ZU-9*	187.76
Shutesbury	1	V-7	5.60
Shutesbury	1	V-8	2.30
Shutesbury	1	V-32	8.40
Shutesbury	10	W-1	7.00
Shutesbury	10	W-2	0.60
Shutesbury	10	W-9	14.10
Shutesbury	10	W-10	27.50
Total Acres:			752.49

\* 'Z' parcels are parcels composed of multiple individual parcels usually on several maps

## Land Acquisition Plan for Atkins Reservoir Watershed

*The following parcels are listed in order of the greatest priority.*

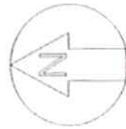
Town	Map	Parcel ID	Size (Acres)	Current Owner	Address
Shutesbury	10	W-79	7.2	Lieberman, Stephen A	January Hills Rd
Shutesbury	10	W-109	11.4	Antonio, Joan	Sumner Mountain Rd
Shutesbury	10	W-108	3.6	DiMare, Charles J.	Sumner Mountain Rd
Shutesbury	10	W-15	20*	Antonio, Joan	Sumner Mountain Rd
Shutesbury	10	W-6	25*	WD Cows	Pratt Corner Rd
Shutesbury	10	W-43	40*	WD Cows	Pratt Corner Rd
Shutesbury	10	W-4	3.1	Adams, Elizabeth	Cushman Rd

\* Part of a "Z" parcel, size approximated from Assessors Map



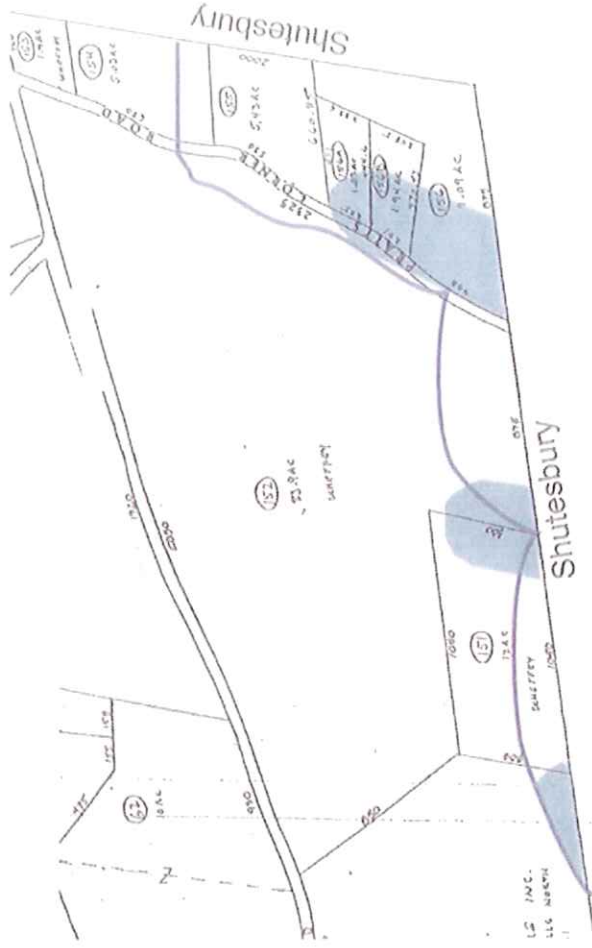
# Town of Leverett

Map compiled from sheet 8 of Leverett Assessor maps  
MAP NOT TO SCALE



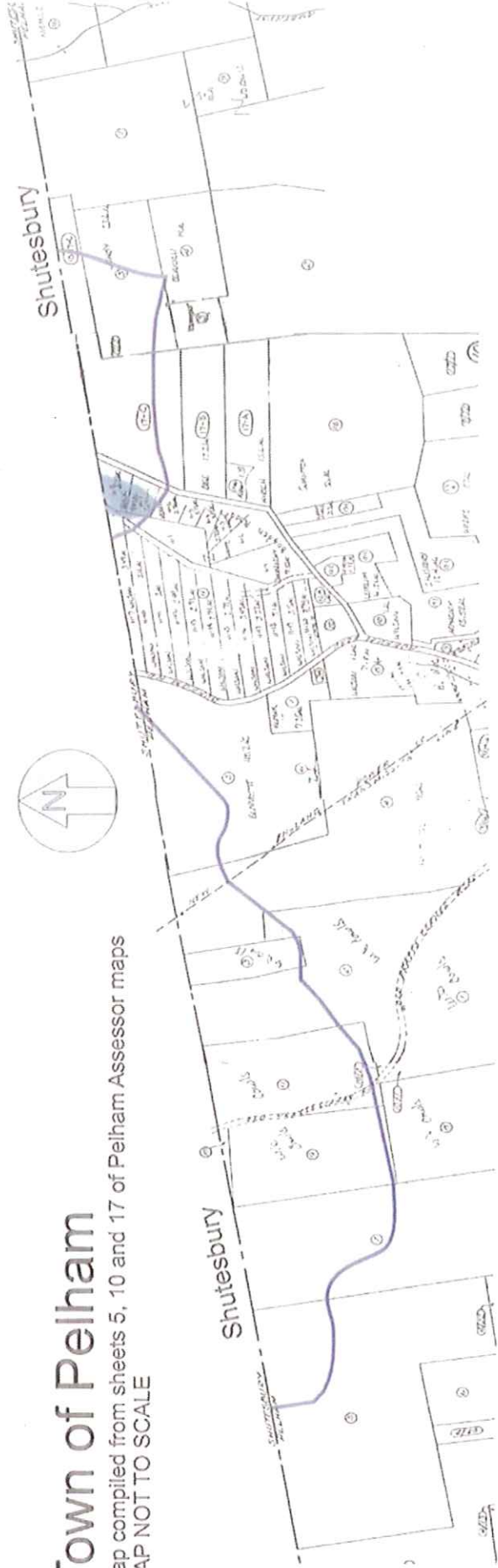
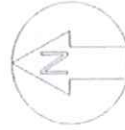
Atkins Reservoir  
Basin

Zone A



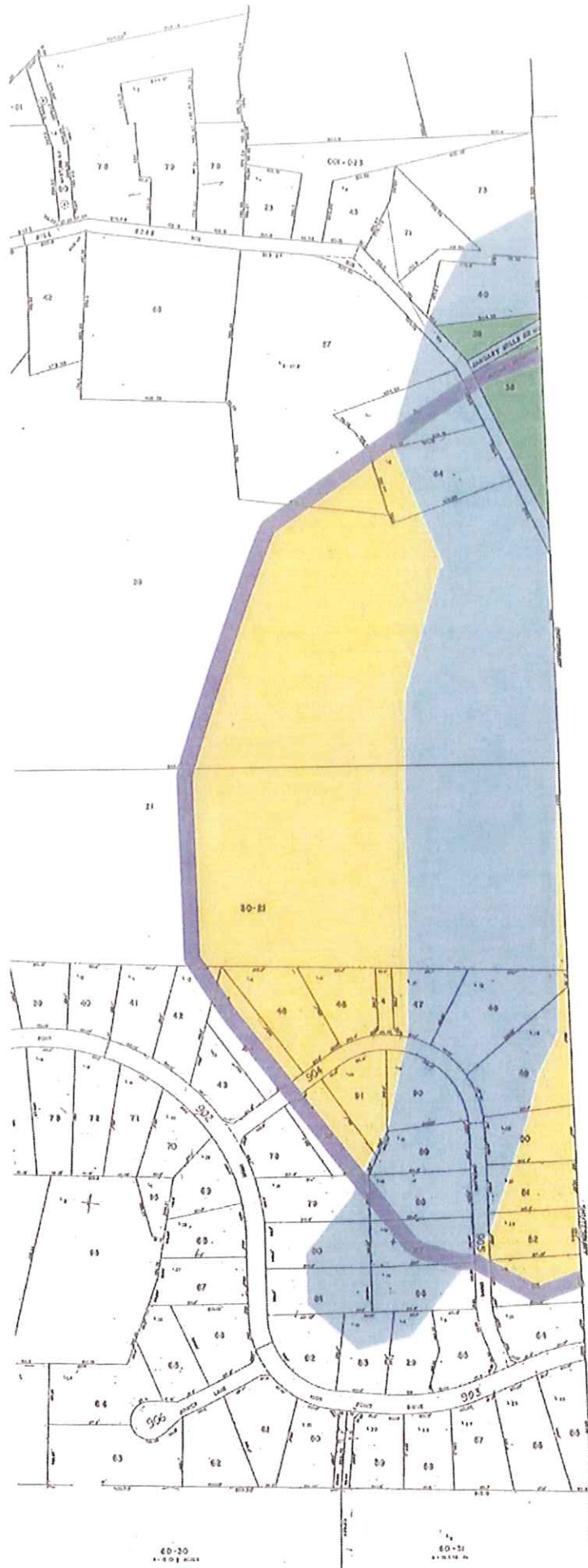
# Town of Pelham





Map compiled from sheets 5, 10 and 17 of Pelham Assessor maps  
MAP NOT TO SCALE



# Town of Amherst Assessors Map

Map Compiled from maps 3B, 3D,  
and 6B from Amherst Assessor's  
MAP NOT TO SCALE



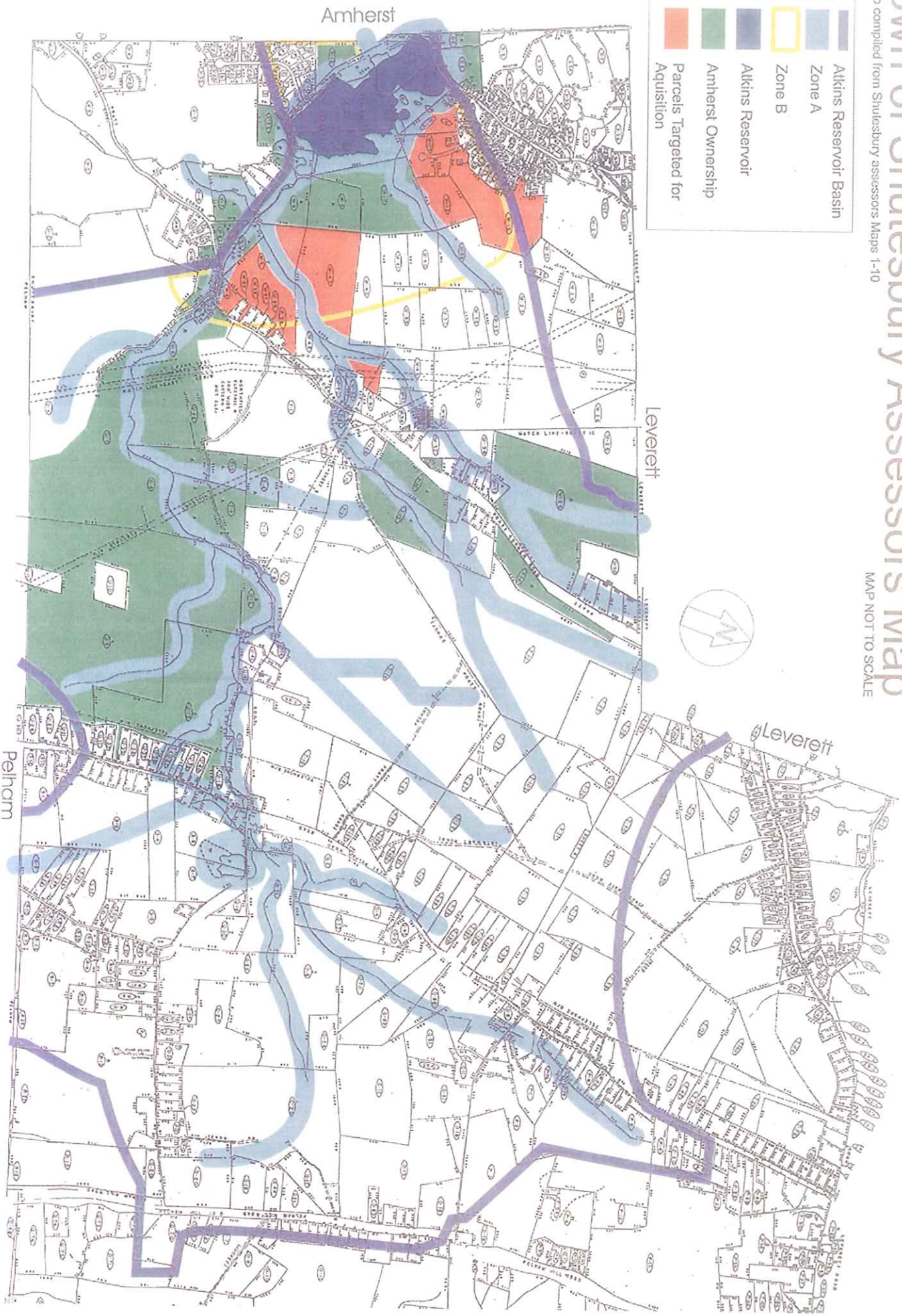
-  Atkins Reservoir Basin
-  Zone A
-  Zone B
-  Amherst Ownership



# Town of Shutesbury Assessors Map

Map compiled from Shutesbury assessors Maps 1-10

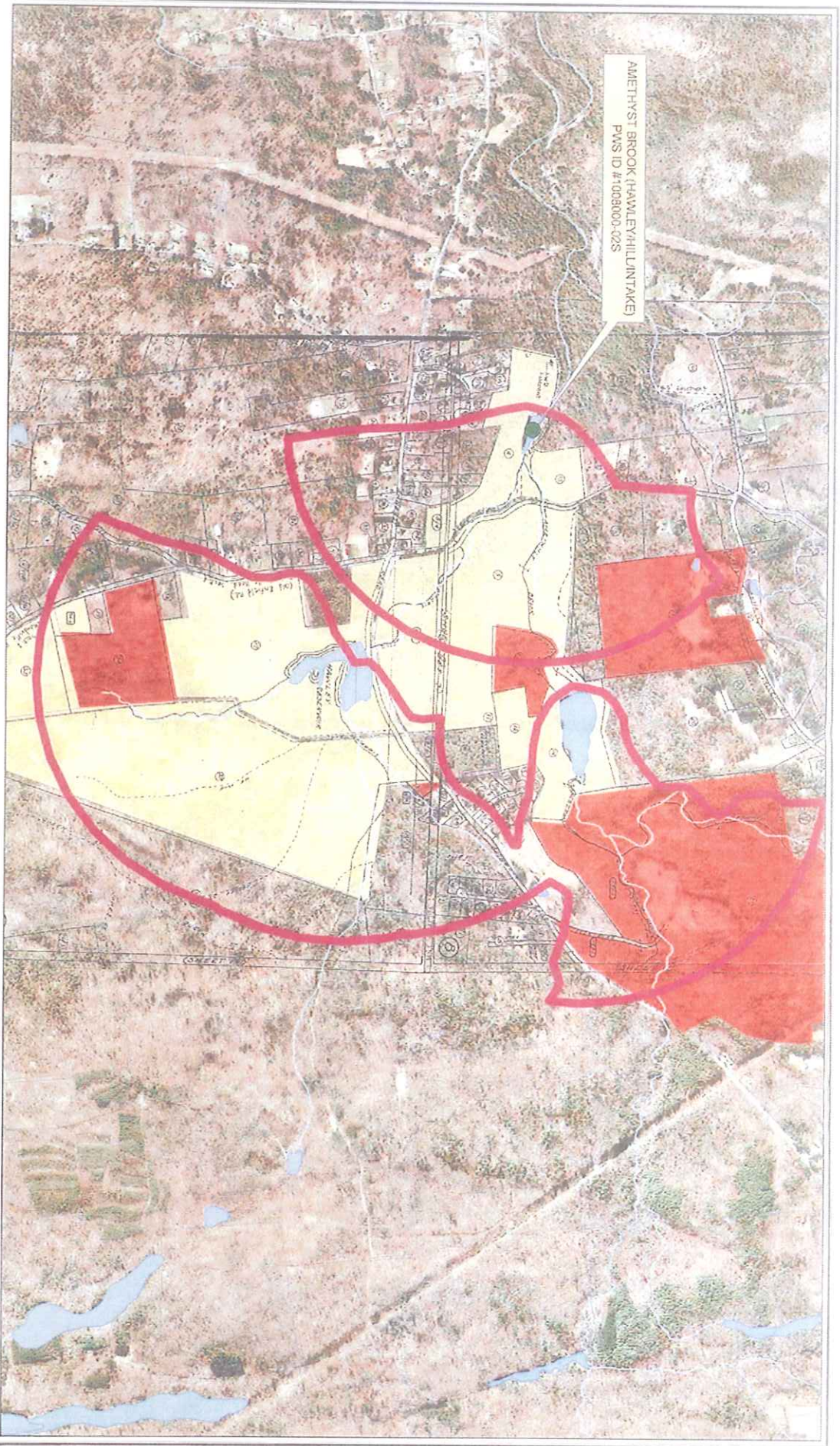
MAP NOT TO SCALE



TOWN OF AMHERST LAND OWNERSHIP MAPS, PARCELS AND  
ACQUISITION;

PELHAM RESERVOIR SYSTEM WATERSHED

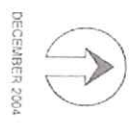




- Legend**
- Zone B
  - Public Water Supply
  - Parcels identified for Land Acquisition
  - Amherst Municipally Owned Parcel



**LAND ACQUISITION MAP**  
**PELHAM RESERVOIR SYSTEM**  
**PELHAM, MASSACHUSETTS**



DECEMBER 2004

**Tighe & Bond**

LAND ACQUISITION PRELIMINARY

**TOWN OF AMHERST LAND OWNERSHIP MAPS, PARCELS AND  
ACQUISITION:**

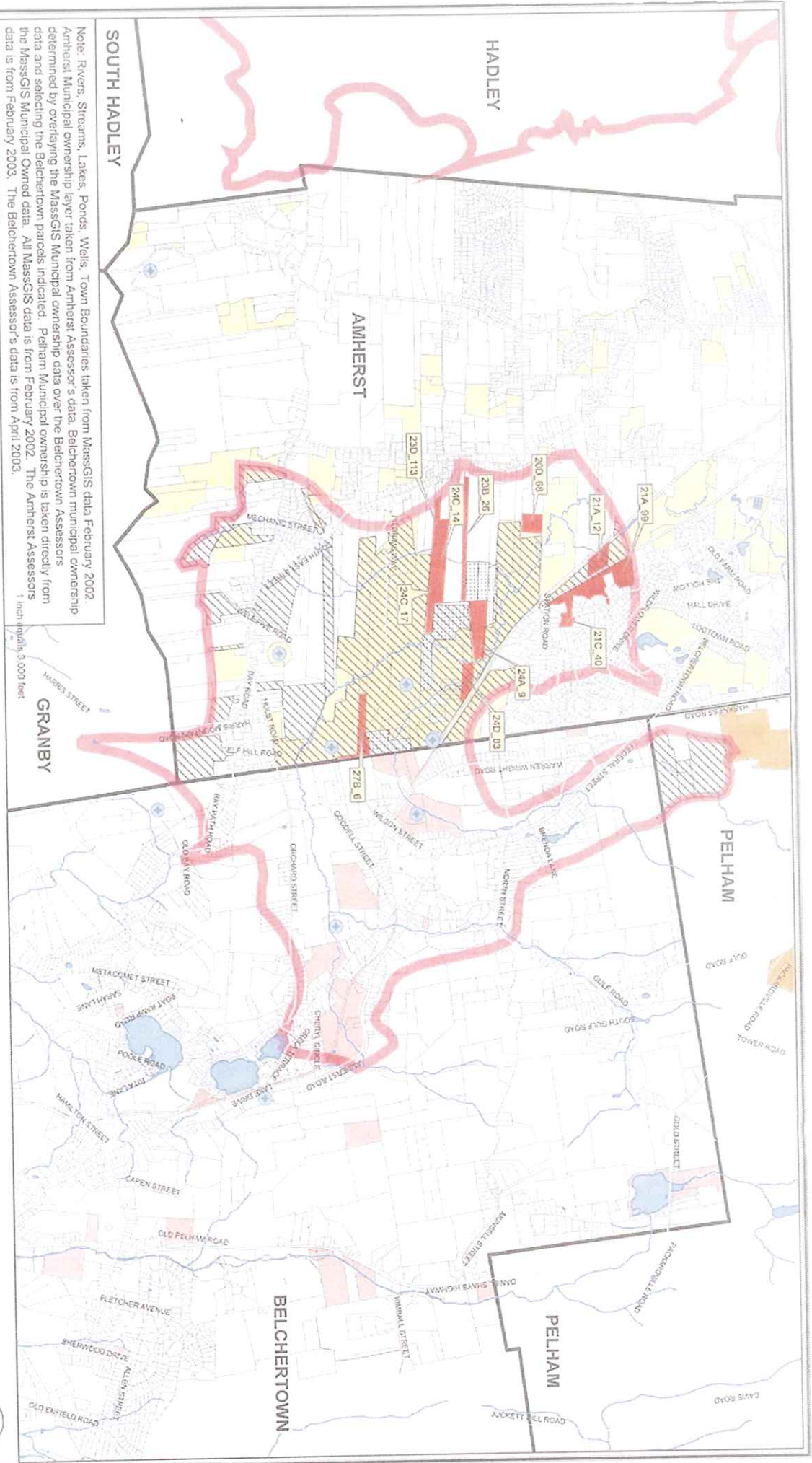
**LAWRENCE SWAMP AQUIFER**

Land Acquisition Plan for Lawrence Swamp Aquifer					
<i>The following parcels are listed in order of the greatest priority.</i>					
Town	Map	Parcel ID	Size (Acres)	Current Owner	Address
Amherst	20D	68	10.2	Carr, Kenneth	
Amherst	21A	12	11.1	Thompson, Anna	
Amherst	21A	99	31	Amherst Woods Property Owners Association	
Amherst	21C	40	11.9	Farm Hills Property Owners	
Amherst	23B	26	15.9	Cowles, Andrew & Jacqueline	
Amherst	23D	113	8.8	Schaeffer, Bruce & Joan	
Amherst	24A	9	22.4	Cowles, Andrew & Jacqueline	
Amherst	24C	13*	47.7	Cowles, Andrew & Jacqueline	
Amherst	24C	14	19.3	Cowles, Andrew & Jacqueline	
Amherst	24C	17	14.9	Whitlock, Henry	
Amherst	27B	6	15.9	Gentile, Louis & Elizabeth	
Amherst	27B	29*	18.7	WD Cowls	
Amherst	24D	83	10.1	Rathburn, Pamela	

Note: Awaiting additional information from Town of Amherst Assessor's office.

Note: "\*" indicates that the property listed currently participates in the Chapter 61 program.





**SOUTH HADLEY**

**AMHERST**

**GRANBY**

**PELHAM**

**PELHAM**

**BELCHERTOWN**

Note: Rivers, Streams, Lakes, Ponds, Wells, Town Boundaries taken from MassGIS data, February 2002. Amherst Municipal ownership layer taken from Amherst Assessor's data. Belchertown municipal ownership determined by overlaying the MassGIS Municipal ownership data over the Belchertown Assessors data and selecting the Belchertown parcels indicated. Pelham Municipal ownership is taken directly from the MassGIS Municipal Owned data. All MassGIS data is from February 2002. The Amherst Assessors data is from February 2003. The Belchertown Assessor's data is from April 2003.

**Legend**

- Public Water Supply
- Amherst Municipally Owned Parcel
- Belchertown Municipally Owned Parcel
- Pelham Municipally Owned Parcel
- Parcels Identified for Land Acquisition
- Chapter 61 Lands
- Open Space



**LAND ACQUISITION MAP**  
**MUNICIPALLY OWNED PARCELS**

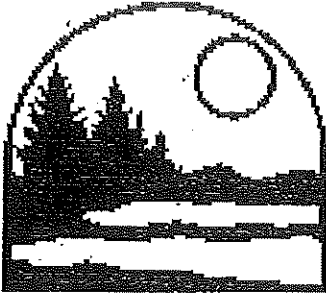
LAWRENCE SWAMP WELLS  
AMHERST & BELCHERTOWN, MASSACHUSETTS

DECEMBER 2004

**Tighe & Bond**







## EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS GRANT ANNOUNCEMENT

ENV 05 POL 01  
Drinking Water Supply Protection Grants

Dated: 24 September 2004  
Responses Due: 7 December 2004

### OVERVIEW

The Executive Office of Environmental Affairs (EOEA) protects, conserves and restores the natural resources of the Commonwealth. A priority in achieving these goals is to assist local communities with the acquisition of land necessary to protect sources of drinking water to ensure adequate supply and quality of public drinking water<sup>1</sup> now and in the future.

Through this announcement, Ellen Roy Herzfelder, Secretary of the Executive Office of Environmental Affairs (the Secretary), makes available grant funding to municipalities, hereinafter referred to as Respondents, to protect and actively maintain key parcels of land believed critical to protecting current and future water supplies. Protection can be provided in a number of ways:

- Fee simple (full ownership)
- Less than fee simple (e.g. conservation restriction)
- A combination of fee simple and less than fee simple

**Estimated Value of Grant Program:** EOEA anticipates that funds will be made available for the fiscal year 2005. There is no guarantee that monies will be awarded. Each award will have, at the discretion of the Secretary, a maximum reimbursement amount of up to \$500,000.

### GRANT REQUIREMENTS

Each Response must identify the specific parcels of land to be acquired, the method of protection to be utilized, and include verification of that parcel's importance to future and/or current water supplies. Other Evaluation Criteria apply (see *Evaluation Criteria* below).

All parcels for which assistance is provided through this grant must be:

- Open to the general public for appropriate outdoor/recreational use while consistent with 310 CMR 22.00
- Protected open space under Article 97 of the Amendments to the Constitution of the Commonwealth of Massachusetts.

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<sup>1</sup> A public water supply is defined as a community or non-transient drinking water supply.

**Match Required:** Respondents will be required to submit a pledge of matching funds equal to a minimum of 100% of funds sought from the Commonwealth through this grant. The Respondent will be required to demonstrate that all funds pledged as match will be available for use prior to 30 June 2005. Federal funding sources such as Community Development Block Grants or Revenue Sharing which are defined by the federal government to be local money may be used as matching funds. The Respondent will be required to show the use of matching funds, equal to the funds sought for reimbursement, as part of their reimbursement documentation. *NOTE: Due diligence costs, such as appraisals, title searches, and surveys made prior to the execution of a contract with a selected Respondent will be accepted as match. However, those expenditures made prior to the execution of a contract are NOT eligible for reimbursement.*

Alternatively, if Respondents are to benefit from a donation of land adjacent to the proposed acquisition, if that land is valued at 100% (or more) of the proposed acquisition the cash match requirement will be waived. The donated land must have a full appraisal consistent with the standards for the land sought. The gift must not have come under the ownership of the municipality prior to twelve months from the date of the Response, or could occur during the term of the award. Both the land acquired through state funds as well as the donated land must be protected by Article 97 of the Amendments of the Constitution of the Commonwealth of Massachusetts.

#### ELIGIBILITY

**Who may apply** - Responses for these grants will be accepted only from municipalities. The responding municipality must have a current Source Water Assessment Report on file with the Massachusetts Department of Environmental Protection. Municipalities may apply for funds to protect lands in cooperation with private water supply companies or non-profit water supply ventures established through inter-municipal agreements. The land proposed for protection may be in the community that is applying or in other communities.

Municipalities are also encouraged to cooperate with private water suppliers as well. Access to the water resources on acquired lands could be offered to private suppliers provided the lands already held by private water companies are protected in perpetuity through conservation restrictions or outright gift to the municipality and public access is granted on these lands for passive recreation. However, Responses will only be accepted from municipalities.

**Eligible Responses** - Only complete Response Packages will be eligible for review (*see Response Process below*).

**What costs are eligible for reimbursement** - Subject to the approval of the Secretary, all reasonable costs associated with acquisition projects shall be eligible for reimbursement. Costs for appraisals, title searches, recording fees, surveys, costs, as well as the actual approved purchase price, are deemed to be eligible acquisition project costs. Respondents must itemize these estimated costs in their proposals and provide actual cost documentation if selected for an award. However, there will be no reimbursement for costs incurred prior to the execution of a contract with a selected Respondent. In order to be eligible for reimbursement, all acquisitions and related costs must be expended prior to 30 June 2005.

## EVALUATION CRITERIA

All Responses will be evaluated according to the following criteria --

- The municipality's Commonwealth Capital Fund (CCF) rating (provided by the Office of Commonwealth Development). The CCF application may be found at: [http://www.mass.gov/ocd/docs/comcap\\_application.pdf](http://www.mass.gov/ocd/docs/comcap_application.pdf)
- Demographic evaluation of community. A demographic quotient for each Massachusetts municipality and can be found in Appendix C.
- The award maximizes leverage potential of the Commonwealth. Although a 1:1 leverage ratio is required, Responses indicating greater leverage will be more favorably viewed.
- Acquisition is critical to protecting a current and/or future high yield surface or groundwater drinking water supply. This can be verified by preliminary engineering studies and/or pumping estimates<sup>2</sup>
- Acquisition is timely, i.e. necessary to avert a potential threat of development or pollution.
- The estimate of operations and maintenance costs, including baseline documentation and monitoring of conservation restrictions, anticipated in future years is complete and reasonable.

Preference Items: EOEa will favor Responses that demonstrate:

- Financial cooperation among other land protection partners. Cooperative efforts with land trusts, other municipalities, private business or individuals will be viewed favorably. Though a minimum public match of 100% of the award sought is required (*see page 1*), more favorable consideration will be given the greater leverage the Commonwealth can achieve for its funds expended. *NOTE: Only one contract will be issued for each award and the Response must identify the lead contact for grant management and responsibility.*
- Acquisition is recommended by the Respondent's DEP approved surface water or wellhead protection plan, the community's Open Space and Recreation Plan, the Massachusetts Statewide Land Conservation Plan, EOEa watershed-based Regional Open Space and Recreation Plan, the community's Master Plan, Community Development Plan, and/or EOEa sponsored Watershed Action Plan, the Commonwealth Connections Plan, a map of prime or state significant farm land. *NOTE: Reference to a community's Source Water Protection Plan, as approved by the community as well as the DEP, will be a specific item of preference. Though not a requirement to apply, communities which do not have such a plan in place are advised to adopt one.*
- Acquisition is in close proximity to other significant protected open space.

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<sup>2</sup> If relying on such studies, they must be included with the Response.

- Protection of this water supply is viable with the completion of this acquisition or with additional acquisitions that the Respondent has a high likelihood of protecting before further development occurs.
- Significant Environmental Justice communities within the Respondent's municipality (see <http://maps.massgis.state.ma.us/EJ/viewer.htm> )
- The proposed acquisition will also enhance environmental health by protecting wildlife habitat, improving forest management, and/or improving historic or archeological resource protection and provide for appropriate public outdoor recreational uses.
- Property lies within an ACEC; within a Bio Map or Living Waters area.
- Existence of archeological resources on the property.
- External support as documented in comment letters from such parties as the Massachusetts Historic Commission, Massachusetts Natural Heritage and Endangered Species Program, local Regional Planning Agency (or equivalent), and similar entities will enhance an application.
- The municipality may provide additional local information not available to state agencies (such as pump tests, engineering studies, aquifer maps, etc.) at the time the priority water supply map was produced. Such information might include:
  - Degree of development and developable land within Zone A and B (surface water supplies) and Zones 1 and 2 (groundwater supplies) for *existing* supplies
  - *Potential* well sites based on land use only (Zone 1's)
  - Towns that are most rapidly growing (based on development from 1985-99)
  - High and medium yield aquifers
  - % of the town that is currently developed as a percentage of full "build-out"
  - Number of water supplies lost to pollution in the town in the past

**Response Process:** Respondents are required to submit complete Response packages by 7 December 2004 (*see Submitting Responses, below*). Each package must contain one original (clearly identified as such) and six copies which contain the following:

- A cover letter on Respondent letterhead addressing the Grant Requirements (*see Page 1*), including but not limited to the method of protection (fee or less than fee) and a summary of the key reasons for protecting the parcel proposed.
- Identification of any partnerships, financial or otherwise, formed to facilitate the acquisition, long term protection, or both.
- A cost proposal, including cash match (or land – *see pages 1 and 2 above*) and the sources of said match
- A project schedule

- An estimate of and commitment letter for all operations and maintenance costs, including baseline documentation and monitoring of conservation restrictions, anticipated in future years
- For Responses proposing conservation restrictions, a draft Conservation Restriction must be submitted
- For each property to be acquired, two appraisal reports, completed by a Massachusetts licensed Real Estate Appraiser.

*NOTE: These reports are a critical component of the Response Package. The appraisal used to certify a value must not be more than a year old, when measured from the effective date of the appraisal to the date the Response is submitted for consideration. NOTE: Due diligence costs, such as appraisals, title searches, and surveys made prior to the execution of a contract with a selected Respondent will be accepted as match. However, those expenditures made prior to the execution of a contract are NOT eligible for reimbursement.*

- The required forms, completed and executed, listed below. The forms listed can be obtained electronically in the "OSD Forms" section of the Commonwealth's Operational Services Division website at: <http://www.mass.gov/portal/index.jsp?pageID=agutility&agid=osd&agu=forms>
  - Commonwealth Standard Terms and Conditions - The Commonwealth Terms and Conditions shall be incorporated by reference into any Contract for Services executed pursuant to this RFR. Respondents are required to execute the Commonwealth Terms and Conditions only once. *Please note, in addition to the Commonwealth Terms and Conditions, upon execution of a final contract the EOEI Supplemental Terms and Conditions (see Appendix A) are in effect.*
  - Contractor Authorized Signature Verification Form
  - Request for Taxpayer Identification Number and Certification (W-9) – this form must be completed by all new vendors who wish to conduct business with the Commonwealth and each time a vendor change occurs, including address, vendor name, etc.
  - Northern Ireland Notice and Certification
  - Consultant Contractor Mandatory Submission Form
- Sufficient materials that will allow MassGIS to create an accurate digital representation of the proposed site. These materials include either 1) a USGS topological map or copy (including the name & date of the quad) with the site accurately drawn on it, with a copy of the site plan and/or a survey plan if available or 2) a printout of the digital representation of the site on a USGS topological map background and a note indicating that the digital representation of the site has been emailed to [dominique.pahlavan@state.ma.us](mailto:dominique.pahlavan@state.ma.us) in appropriate format (Massachusetts State Plane Meters NAD1983 Datum) with a subject line that includes the words "Drinking Water Protection Grant"). *NOTE: MassGIS will attempt to digitize this parcel using these materials but may request additional material from the applicant if the materials provided are not at an appropriate scale or are not sufficiently clear to support conversion to digital data that conform to MassGIS data standards. Topographical maps can be purchased at book stores or printed from <http://www.state.ma.us/mgis/mapping.htm>. Please call Dominique Pahlavan at MassGIS, 617.626.1184, with any questions.*

**ALL OF THESE COMPONENTS MUST BE INCLUDED IN THE RESPONSE PACKAGE. FAILURE TO PROVIDE ANY ONE OF THESE COMPONENTS IN THE RESPONSE PACKAGE WILL RESULT IN DETERMINING THE RESPONSE AS INELIGIBLE.**

You may also wish to consider providing the following documentation:

- ☐ Map depicting abutting protected lands
- ☐ Map depicting community aquifer protection zones (if any)
- ☐ Soils and/or land use maps

**NOTE:** Several landholdings in a single, contiguous tract may be packaged into one application. Unrelated, separate landholdings must be submitted as individual applications.

The Respondent selected for Contract negotiation and execution will be required to complete the Commonwealth Standard Contract Form. By executing the Standard Contract Form, the Respondent certifies under the pains and penalties of perjury that it has submitted a Response to a Request for Response (RFR) issued by EOEA and that this Response is the Respondent's offer as evidenced by the execution by the authorized signatory.

**Submitting Responses:** All Responses are due no later than 2:00 p.m. on 7 December 2004. Any responses received after the deadline will automatically be rejected. A postmark will NOT be accepted for verification of date of submission. *Responses will NOT be accepted by fax machine or electronic mail.* The outside of the package holding the Response and copies must be clearly marked: ENV 05 POL 01. One original and five (5) copies of the Response must be submitted to:

Christine Berry  
Executive Office of Environmental Affairs  
100 Cambridge Street – 9<sup>th</sup> Floor  
Boston, MA 02114

Only the original submission must be provided in hard copy format. The copies of the Response may be submitted, as one concise document (including maps) in digital format compatible with Microsoft Office 2000 or Adobe Acrobat. Though it will not impact the evaluation ranking, EOEA prefers digital submissions of the Response copies.

Respondents considering delivering documents to EOEA by hand are reminded that Boston is experiencing significant construction in the Government Center area and travel delays should be anticipated. Please allow plenty of time for travel into and out of the city. Responses will be accepted PRIOR to the deadline. All Responses will be opened in public just after the deadline and entered into the log, though no award decision will be made at that time.

**Award Schedule:**

RFR Release Date:

24 September 2004

Response Deadline

7 December 2004 by 2:00 PM

Awards

Anticipated announcement within 60 days of  
Response deadline.

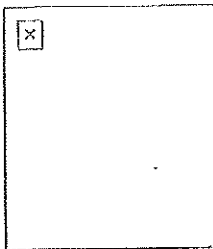
*ENV 05 POL 01  
Drinking Water Supply Protection Grants*

**Documentation Required for Reimbursement:** If selected for an award, payments under this RFR will be for reimbursement, requiring the Respondent to raise, borrow or appropriate the total acquisition costs. The municipality will then be reimbursed a portion of those costs as a result of the grant. All reasonable costs associated with acquisition projects, subject to the approval of the Secretary, shall be eligible for reimbursement. Costs for appraisals, title searches, recording fees, surveys, costs, as well as the actual approved purchase price, are deemed to be eligible acquisition project costs. Respondents must itemize these costs in their proposals and provide cost documentation if selected for an award. However, there will be no reimbursement for costs incurred prior to the execution of a grant contract with a selected Respondent. If such expenses were made within one year from the selected application, they will be accepted as match.

In order to file for reimbursement, municipalities will be required to provide the following documentation:

- ☐ Certified copy of recorded Deed, Order of Taking, or Conservation Restriction
- ☐ Copy of title certification
- ☐ Copy of environmental site assessment
- ☐ Vote of Town Meeting or City Council authorizing the purchase of subject property
- ☐ Final summary of all land costs/match documentation
- ☐ Attested statement of City or Town Treasurer indicating the amount of payment, date paid and authority of payment
- ☐ Photocopy of all cancelled checks
- ☐ Request for Reimbursement Form (see *Appendix B*)
- ☐ GIS Data Entry Form (see *Appendix B*)

In order to be eligible for reimbursement, all acquisitions and related costs must be expended by 30 June 2005. All requests for reimbursement must be submitted to EOEA by August 4, 2005.



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

ARGEO PAUL CELLUCCI  
Governor

JANE SWIFT  
Lieutenant Governor

BOB DURAND  
Secretary

LAUREN A. LISS  
Commissioner

**Determining a Threat To Public Water Supplies Related to Presence of Beaver and Muskrat  
Standard Operating Procedure (SOP)  
Drinking Water Program**

Applies to Public Water Suppliers (PWSs) with beaver or muskrat populations endangering public water supply sources or pump stations:

**Rationale:** The presence of beavers or muskrats near public water supply sources may pose a threat to the protection of public health. Both animals have commonly been identified as carriers of *Giardia Lamblia* and *Cryptosporidium*--pathogens identified within the Surface Water Treatment Rule and Enhanced Surface Water Treatment Rule respectively as posing an unacceptable risk to drinking water. Amendments to the State's trapping laws charge DEP with determining when a threat to human health and safety exists as a result of the presence of beavers and muskrats in and around public water supply sources and pump stations. A DEP determination that a threat exists may be used by an applicant to petition the local Board of Health for an emergency permit to eliminate the threat.

**Applications**

Applications to DEP requesting that a determination as to the existence of a threat to human health and safety resulting from beavers and muskrats in and around public water supply sources and pump stations must include the following information:

1. A scaled site map showing the location of all affected areas where determinations are requested in relation to all potentially impacted public water supply sources or pump stations. All public water supply sources and pump stations must be labeled on the site plan.
2. A narrative which:
  - a. Details the reason for the determination request;
  - b. Identifies the duration of the problem;
  - c. Identifies control mechanisms already used;
  - d. Identifies changes in water levels or flowpath. This information will be specific to problems related to flooding; and
  - e. Includes available evidence of interaction between groundwater sources and surface waters.
3. A description of the proposed method for eliminating the threat which:

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DEP on the World Wide Web: <http://www.state.ma.us/dep>

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- a. Specifies the type of trap, if any, that will be used;
- b. Specifies if dams will be breached; and
- c. Specifies if the use of non-lethal management or water-flow devices is proposed.

### Review and Determination

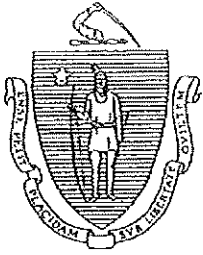
DEP may determine that a threat to human health and safety exists if beavers or muskrats or dams or active lodges are observed:

- Within a pathogen control zone previously sanctioned by the Massachusetts Division of Fisheries and Wildlife.
- Within a terminal reservoir or in a tributary within 400 feet of a terminal reservoir.
- Within 400 feet of a public water supply well or wellfield.
- Within 200 feet of a public water supply pump station.
- In a tributary, beyond 400 feet of a terminal reservoir, if the applicant can demonstrate that degradation in water quality is occurring. Parameters used to demonstrate a degradation in water quality shall include:
  - Fecal coliform
  - Total coliform
  - Turbidity
  - Total Organic Carbon
  - *Giardia*
  - *Cryptosporidium*

### Actions

Following the submittal of a complete application, the DEP will conduct a site visit to determine if a threat exists to a water supply. The DEP/Wetlands Program, local Board of Health, and local conservation commission will be invited to any field visit for a determination. After the field visit, DEP will send the applicant a determination letter with a copy to the local Board of Health, Massachusetts Division of Fisheries and Wildlife, and Massachusetts Department of Public Health. DEP will try to issue its determination within 5 business days from receipt of a complete application. If that determination identifies that a threat exists, the applicant may petition the local Board of Health for an emergency permit to abate the threat. The determination from DEP will require that the applicant notify DEP within a specified time period as to the actions completed and whether the threat was successfully eliminated. Proposals for the removal or breaching of dams, or other actions which will lower water levels must receive the approval of the local conservation commission within the City/Town that the proposed action will take place.

The emergency permit for trapping is for ten days during which trapping can be carried out and dams may be removed as allowed. There is authority by Fisheries and Wildlife for their Director to permit an extension for an additional 30 days.



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Guidance for Conservation Commissions Implementing G.L. c.131, s.80A  
Threats from Beaver and Muskrat-Related Activities

Summary of the Law

The Massachusetts Legislature recently amended G.L. c.131, s.80A, with the passage of "An Act Relative to Foothold Traps and Certain Other Devices." This new law became effective on July 21, 2000, and makes it easier for applicants to alleviate threats caused by beaver and muskrat-related flooding.

Any person may apply to the Board of Health for an emergency permit to immediately alleviate a threat to human health and safety from beaver or muskrat-related activity. The law includes a list of activities, summarized here, that may constitute a threat to human health and safety. (See enclosed copy of the new law for a complete list).

- Beaver or muskrat occupancy of a public water supply (the Department of Environmental Protection (DEP) must make this determination);
- Beaver or muskrat-caused flooding of drinking water wells, well fields, pumping stations, sewage beds, septic systems, sewage pumping stations, public or private ways, driveways, railways, airport runways or taxi-ways, electrical, gas, communication, or other public utility structures or facilities;
- Beaver or muskrat-caused flooding affecting the public use of hospitals, emergency clinics, nursing homes, homes for the elderly, fire stations, hazardous waste, incineration, or resource recovery facilities, or other facilities where flooding may result in the release of hazardous or noxious materials;
- Damage (gnawing, chewing, entering or other damage) to electric or gas facilities, transmission or distribution equipment, cable, alarm systems, or facilities, caused by beavers or muskrat;
- Beaver or muskrat-caused flooding or structural instability on the applicant's property, if it poses an imminent threat of substantial property damage or income loss of the following types: flooding of residential, commercial, or industrial facilities; flooding of or access to commercial agricultural lands which prevents normal agricultural practices from being conducted; reduction in the production of an agricultural crop caused by flooding or compromised structural stability of commercial agricultural lands; and flooding of residential

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lands in which the Board of Health, its chair or agent or the state or federal department of health has determined a threat to health and safety exists.

If the Board of Health determines that such a threat exists, the Board of Health shall immediately issue an emergency permit to alleviate the threat. The permit is valid for ten days. In some cases, the applicant may apply to the Board of Health for two additional ten-day permits. (See the new law for details). If denied, the applicant may appeal to the Massachusetts Department of Public Health (DPH) for a determination as to the existence of the threat. The Massachusetts DPH will be sending out written guidance to the municipal Boards of Health to help them implement the law.

The Board of Health permit authorizes the applicant to remedy the threat in one of three ways: 1) use of conibear or box or cage-type traps (subject to Massachusetts Division of Fisheries and Wildlife (DF&W) but not Conservation Commission regulation); 2) breaching of dams, dikes, bogs or berms, subject to determinations and conditions of Conservation Commissions; or 3) use of any nonlethal management or water-flow devices, subject to determinations and conditions of Conservation Commissions.

The applicant "in conjunction with the Board of Health" may apply to the DF&W for a 30-day extension permit. If the extension is granted, the DF&W shall develop, with the assistance of the applicant, the Board of Health, and the Conservation Commission, a plan to abate the beaver or muskrat problem using alternative, nonlethal management techniques in combination with water-flow devices, subject to Conservation Commission determinations and conditions. The plan may include box and cage type-traps, if necessary, subject to all applicable permitting requirements, including, but not limited to, any permits required by the DF&W.

Beaver and muskrat-related problems that are determined by the Board of Health to not constitute threats to public health and safety under this new law may still be addressed with assistance and approval from DF&W pursuant to regulations at 321 CMR 2.08. Any permits issued by DF&W that allow an alteration to a wetland resource area, for either long term management purposes or beaver related problems that do not constitute a threat to public health, are still subject to the determinations and conditions of the Conservation Commissions.

G.L. c. 131, s. 80A and the Wetlands Protection Act.

The Legislature recognized that Conservation Commissions have always had an important role to play in solving beaver and muskrat problems, and it specifically emphasized that breaching and other water management proposals are subject to "determinations and conditions" of Conservation Commissions pursuant to the Wetlands Protection Act (G.L. c.131, s.40). Still, the Legislature placed responsibility for declaring a beaver or muskrat-related "threat to human health and safety" squarely with Boards of Health rather than with Commissions. Commissions, therefore, should not second-guess Boards of Health as to the existence of these threats. Commissions can, however, ask as many questions as necessary to ascertain the exact nature, scope, and magnitude of the threat, as well as the details of the proposed remedy, in order to impose conditions that will protect the interests of the Wetlands Protection Act. Commissions should work towards solutions that will alleviate immediate threats while protecting wetlands

interests to the greatest extent possible. Close cooperation with applicants and Boards of Health will be essential in achieving this goal.

Resource areas likely to be altered by a dam breaching or water management proposal include banks, freshwater wetlands, land under water bodies, land subject to flooding, and riverfront areas. The interests served by these resource areas include: protection of public and private water supplies; protection of groundwater supplies; flood control; storm damage prevention; prevention of pollution; protection of fisheries; protection of wildlife habitat; and less likely, protection of land containing shellfish.

In order to properly condition the proposed work under either an Emergency Certification or Orders of Conditions, Commissions should become familiar with the site. A site inspection is an important part of the process. A site inspection that includes not only the site with the alleged problem, but also the property on which the dam is located, will be necessary. Although the Commission has the right-of entry on an applicant's property, be sure to seek permission from all property owners, because in many cases, the landowner with flooding problems may not be the owner of the dam. The nearest DF&W District Office may be able to provide assistance and information concerning site inspections, particularly at chronic problem sites.

If an Emergency Certification is to be issued, (see below "Recommended Process" for guidance on the use of Emergency Certifications versus Orders of Conditions), the Commission should require that the threat caused by beaver or muskrat be described with as much specificity as possible, and condition the activity to limit the alterations to the minimum necessary to abate the immediate public health threat and safeguard the interests protected by the Wetlands Protection Act and regulations. DEP recommends that the Emergency Certification be used to handle most of these cases. Any additional alterations beyond that necessary to abate the immediate public health threat require a follow-up Notice of Intent filing. The Request for Emergency Certification should include flood elevations, if known, and at least a general description of the frequency and duration of flooding. Commissions should request specific information on the technique proposed to remedy the threat, including construction and maintenance methods, predicted impact on water levels both up and downstream, and a preliminary analysis of wetland interests that may be impacted.

If a Notice of Intent is required to abate the immediate public health threat or for additional work beyond that specifically authorized in an Emergency Certification, the Conservation Commissions should require the same information listed above under Emergency Certifications and seek answers to the following questions. How long has the beaver dam been in existence, and what is its size and condition? Has it recently been expanded or otherwise altered? How well developed is the pond and/or wetland system behind the dam? Is there evidence of recent water level increases? What are conditions like downstream? What is the potential for flooding or erosion with the proposed remedy? What are the impacts on wildlife habitat, both upstream and downstream, of the proposed remedy? Would rare or endangered species be impacted? Would a water-flow device or limited breach alleviate the immediate threat, without causing undue impacts? Commissions may request that the applicant provide an analysis of optimum water levels that would alleviate the immediate flooding problem while allowing the

dam/pond/wetland system to remain essentially intact. Commissions should condition the proposed activities to safeguard the interests protected by the Wetlands Protection Act.

### *Potential Solutions*

Two common solutions to eliminate flooding associated with beavers and muskrat activities which require review by conservation commissions include: installation of water flow devices or the breaching of dam structures.

If properly constructed, the installation of a water flow device provides an effective long-term measure for controlling flooding. Technical guidance on the use of water flow devices has been provided by the Division of Fisheries and Wildlife (DF&W) in a booklet entitled, "The Use of Water Flow Devices in Addressing Flooding Problems Caused by Beaver in Massachusetts." (see enclosed copy). This booklet provides an excellent summary of beaver control techniques, outlining the pros and cons of each. DEP recommends that Commission members read this manual in its entirety, and keep it handy as a reference guide. Please note, though, that the permitting summary on page 3 is now out-of-date because of the new law. In addition, please note that since this booklet was published, additional types of water control devices have entered the market and may prove effective in a wider range of circumstances. For additional information on water level control devices, please contact your local DF&W District Office (DF&W District phone numbers are listed in the water flow devices booklet).

The DF&W booklet contains practical recommendations that can be used as conditions and made part of either an Emergency Certification or Orders of Conditions for the installation of water level control devices. For example, the booklet recommends specific maintenance intervals and measures for some of the water flow devices; these could be turned into conditions to ensure the devices function as intended. If limited breaching is approved, the booklet provides suggestions for timing (breach in the morning, as beavers are most active at night) and recommendations for hand and mechanical methods. These recommendations also could be turned into conditions.

An alternative to installing water flow devices to control water level is to breach a beaver dam. DF&W has also developed guidance entitled "Issuing Breach Permits" (see attached) which discuss issues to be considered when designing plans to breach a dam. The dam breach guidance reviews the types of breaches that are generally appropriate to minimize flooding impacts or changes in hydrology up or downstream of the breach location, and to protect wildlife habitat located in wetland jurisdictional areas. Breaching has generally not been recommended by DF&W during the winter and spring months, when beaver kits are born. Conservation Commissions should adhere to these DF&W guidelines, and include special conditions in the Emergency Certification or Order of Conditions specifying the size of the breach approved and controlling the release of water to minimize downstream flooding. The DF&W guidance entitled "Issuing Breach Permits" contains suggested special conditions to limit flooding impacts from sudden release of water from a breached beaver dam, and recommendations that can be made into conditions. For additional information on breaching, please contact your local DF&W District Office.

*Recommended Process*

The new law is silent as to how Conservation Commissions are to impose "determinations and conditions" under the Wetlands Protection Act. Nonetheless, the legislation clearly conveys a sense of urgency in dealing with these problems by directing Boards of Health to act "immediately" to issue emergency permits. Board of Health permits are valid for only ten days.

It is recommended that Boards of Health and Conservation Commissions take steps to establish a mutually agreeable process to handle beaver related filings, including appropriate notification to both the Board of Health and Conservation Commission, what information should be included in both applications, and a schedule for actions, given that a public health threat may exist. In communities with good working relationships between municipal boards, the Board of Health may agree to send applicants to the Conservation Commission for input prior to issuing an emergency permit, or will at least solicit input from the Commission concurrently. However, in many cases, applicants will seek their permits from the Board of Health prior to dealing with the Conservation Commission, and the Commission will then be forced to respond quickly. Commissions should therefore be prepared for an increase in requests for Emergency Certification under the Wetlands Regulations at 310 CMR 10.06. DEP believes that Emergency Certifications can be used effectively in this situation, provided the work authorized is limited to abating the immediate emergency and alleviating the specific beaver or muskrat-related threat. Emergency Certifications are appropriate for handling short-term, limited measures, such as the installation of temporary or small water flow devices, or the authorization of a limited breach.

Longer term projects, such as those which exceed the time authorized by the Board of Health and require plans developed as part of the DF&W 30-day extension permit, or activities beyond those necessary to abate the immediate public health threat, are better handled through a routine Notice of Intent filing. In addition, major projects such as full breaching of a well-established dam, which will result in long-term impacts to established wetlands, should be handled through a Notice of Intent and Order of Conditions. Proposals to alleviate beaver and muskrat-related problems that are not determined by the Board of Health to be threats to public health and safety under this new law should also continue to be handled through the Notice of Intent process.

Projects that require a Notice of Intent require the associated Wetlands Filing Fee. DEP recommends that Category 2 (water level variations - \$250) be used in situations where water flow devices or very limited breaches are proposed. Category 4 (dam, sluiceway, tidegate (safety work - \$725) can be used for proposals that seek to dramatically alter and/or fully breach an existing dam.

DEP does not recommend using the Request for Determination process to handle beaver and muskrat flooding, as it is unlikely that the work proposed will occur solely in the buffer zone, and it is likely that the work will impact wetland resource areas.

### *Issuing Emergency Certifications*

Emergency Certifications to abate the immediate public health threat may be issued for up to 30 days. DEP recommends that Emergency Certifications be issued to coincide with the ten-day Board of Health permit (which may be extended for two ten-day extensions). The Commission can make the extensions automatic (triggered by Board of Health extensions); or, if the Commission really has the time and energy, it can conduct a separate review for each extension.

The Conservation Commissions must only allow the minimum necessary work to abate the immediate public health threat. This could mean allowing the breaching or removal of a small section of the top of the dam to drawdown the water in the pond up-gradient of the dam, or the installation of a water flow device. Any drawdown allowed should be conditioned to occur gradually, to avoid sudden downstream flooding from the breached dam.

To comport with the wetlands Emergency Certification language at 310 CMR 10.06(1), Boards of Health should not only authorize the remedial work, but should order that the work be done. Even if a Board of Health does not use the word "order" in its emergency permits, Conservation Commissions are not precluded from issuing Emergency Certifications. The new legislation sends a strong and explicit message that beaver and muskrat-caused threats to human health and safety should be remedied much more quickly than the routine Notice of Intent process. The legislation directs Boards of Health to issue emergency permits immediately upon finding of a threat, and sets up ten-day timelines to alleviate these threats. These actions fall within the framework and scope of the wetlands Emergency Certification provisions at 310 CMR 10.06.

As part of the Emergency Certification process, Conservation Commissions retain the option of requesting an after-the-fact or follow-up Notice of Intent filing. The submittal of an NOI will be most useful if long-term solutions need to be analyzed, or if short-term measures implemented under an Emergency Certification do not perform as expected. Emergency Certifications can, and should, be conditioned to protect wetland interests. Each Emergency Certification should specifically describe the work to be done as well as the goal to be achieved (e.g. lower water level by 1 foot to elevation 36 to eliminate flooding of First Street at intersection with Beaver Brook).

All Emergency Certifications should be conditioned to ensure that the Commission is not granting any property rights or authorizing trespass. Often, the applicant with a flooding problem is not the owner of the property upon which the dam is located.

DEP has developed an Emergency Certification Form that may be used in these cases as well as other situations requiring emergency action. A copy of this new form is enclosed in this packet and will be available on the internet at <http://www.state.ma.us/dep>. The Emergency Certification Form includes general conditions that mirror those in the standard Orders of Conditions form.

### *Special Conditions for either Emergency Certifications and Orders of Conditions*

Emergency Certifications and Orders of Conditions, issued to abate an immediate public health threat or for long-term management of beaver related problems, should contain special conditions to prevent sudden flooding impacts from breached dams, changes in hydrology, and

alterations to wildlife habitat located in wetland resource areas, including beaver habitat. Please refer to the DF&W guidance referenced above entitled "Issuing Breach Permits" and "The Use of Water Flow Devices in Addressing Flooding Problems Caused by Beavers in Massachusetts."

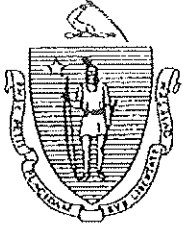
DEP recommends that the Boards of Health and Conservation Commissions send each other their written decisions on any beaver or muskrat threat related applications. Copies of the Emergency Certification must be sent to the DEP Regional Office, Wetlands Section. DF&W has requested that all Emergency Certifications or Orders of Conditions issued by Conservation Commissions to alleviate beaver and muskrat-related problems be sent to them at:

Fur Bearer Project Leader  
Massachusetts Division of Fisheries & Wildlife  
Wildlife Section  
Field Headquarters  
1 Rabbit Hill Road  
Westborough, MA 01581

A simplified process and shortened timeframe for DEP's review of Emergency Certifications on appeal is set forth at 310 CMR 10.06(5).

For more information on the recommended process for permitting under the Wetlands Protection Act and regulations, please contact the appropriate regional DEP Wetlands Circuit Rider or wetlands program. There contacts are NERO: Michael Abell at 978-661-7811 or Gillian Davies at 978-661-7812; CERO: Nancy Reed at 508-767-2781; WERO: Susan Gillan at 413-755-2147 or Terry Eucker at 413-755-2144; SERO: Carlos Fragata at 508-946-2885, or contact Thomas Maguire in the Boston office at 617-292-5602. We encourage you to discuss novel and or controversial cases with your regional Circuit Rider, and welcome your feedback and comments on this guidance.





The Commonwealth of Massachusetts  
Executive Office of Health and Human Services  
Department of Public Health  
250 Washington Street, Boston, MA 02108-4619

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COMMISSIONER

February 14, 2001

Guidance for Boards of Health Implementing M.G.L. c.131, s.80A  
Threats from Beaver and Muskrat-Related Activities

Summary of the Law

The Massachusetts Legislature recently amended M.G.L. c.131, s.80A, with the passage of "An Act Relative to Foothold Traps and Certain Other Devices." This new law became effective on July 21, 2000, and was intended to make it easier for applicants to alleviate threats caused by beaver and muskrat-related flooding.

Any person may apply to the Board of Health (Board) for an emergency permit to immediately alleviate a threat to human health and safety from beaver or muskrat-related activity. The law includes a list of activities, set forth below, that may constitute a threat to human health and safety. The activities in this list are intended to be suggestions about what could constitute a threat, but the determination of whether an activity poses a threat is left to the judgment of the local health officials. If local health officials determine that there is not a threat to public health or safety, this does not mean that the person seeking assistance is without options. With appropriate permits, they can still install water flow devices, breach dams, or trap, under different conditions, which are outlined within the last three paragraphs of MGL c. 131, s. 80A. The person can also appeal the Board's decision to the Massachusetts Department of Public Health (MDPH) or the Division of Fisheries and Wildlife (DF&W) (see page 11).

A threat to human health and safety may include:

- (a) beaver or muskrat occupancy of a public water supply;
- (b) beaver or muskrat-caused flooding of drinking water wells, well fields or water pumping stations;
- (c) beaver or muskrat-caused flooding of sewage beds, septic systems or sewage pumping stations;
- (d) beaver or muskrat-caused flooding of a public or private way, driveway, railway or airport runway or taxi-way;
- (e) beaver or muskrat-caused flooding of electrical or gas generation plants or transmission or distribution structures or facilities, telephone or other communications facilities or other public utilities;
- (f) beaver or muskrat-caused flooding affecting the public use of hospitals, emergency clinics, nursing homes, homes for the elderly or fire stations;
- (g) beaver or muskrat-caused flooding affecting hazardous waste sites or facilities, incineration or resource recovery plants or other structures or facilities whereby flooding may result in the release or escape of hazardous or noxious materials or substances;
- (h) the gnawing, chewing, entering, or damage to electrical or gas generation, transmission or distribution equipment, cables, alarm systems or facilities by any beaver or muskrat;

- (i) beaver or muskrat-caused flooding or structural instability on property owned by the applicant if such animal problem poses an imminent threat of substantial property damage or income loss, which shall be limited to: (1) flooding of residential, commercial, industrial or commercial buildings or facilities; (2) flooding of or access to commercial agricultural lands which prevents normal agricultural practices from being conducted on such lands; (3) reduction in the production of an agricultural crop caused by flooding or compromised structural stability of commercial agricultural lands; (4) flooding of residential lands in which the municipal board of health, its chair or agent or the state or federal department of health has determined a threat to human health and safety exists. The Department of Environmental Protection shall make any determination of a threat to a public water supply.

If the Board of Health determines that such a threat exists, the Board shall immediately issue an emergency permit to alleviate the threat. The permit is valid for ten consecutive days. If the Board determines that such a threat does not exist, the Board shall immediately deny the permit and specify, in writing, the reasons for the denial. In case of a denial, the Board shall also inform the applicant that he or she can employ one of the following options for resolving their problem: 1) appeal to the state Department of Public Health for a determination as to the existence of the threat; 2) appeal to the DF&W if there is a question as to the cause (i.e., type of wildlife) of the threat; 3) contact DF&W for assistance with solutions covered under the non-health or safety threat section of the law (last three paragraphs of M.G.L. c. 131, s. 80A); or 4) contact a private contractor or non-governmental organization for assistance. MDPH and DF&W have agreed to consult with each other on issues where either agency clearly has more expertise, i.e., DF&W will take the lead on issues requiring wildlife expertise, and MDPH will take the lead on issues requiring public health expertise.

The permit authorizes the applicant to remedy the threat in one of three ways: 1) use of Conibear or box or cage-type traps (subject to DF&W but not Conservation Commission

regulation); 2) breaching of dams, dikes, bogs or berms, subject to determinations and conditions of Conservation Commissions; or 3) use of any non-lethal management or water-flow devices, subject to determinations and conditions of Conservation Commissions (see Sample Permits in Appendix I).

If the applicant has been unable to solve the problem within the 10-day emergency permit period, the applicant, in conjunction with the Board of Health, shall subsequently apply to the DF&W for a 30-day extension permit. While awaiting approval from the DF&W for the 30-day extension permit, the applicant may apply to the Board for two additional ten-day emergency permits (see page 9 for guidance on extension permits).

Beaver and muskrat-related problems that are determined not to constitute threats to public health and safety under this new law may still be addressed. DF&W staff, private contractors, and non-governmental organizations specializing in this work, can assist individuals with dam breaching, installation of water control devices, and trapping subject to any necessary permit. Under M.G.L. c. 131, s. 80A, permits to use a Conibear trap can be issued by DF&W if box or cage traps and alternative methods like water control devices have been tried unsuccessfully for 15 days.

### **Making Public Health/Safety Determinations**

The Board of Health must make a determination as to whether the applicant has a "threat to human health and safety". The intent of the legislation was to provide a quick remedy to flooding caused by beaver or muskrat. In the law, the permit is termed an "emergency permit". Such terminology is meant to imply that the permit is short lived (i.e., ten days) and will be issued quickly. The term "emergency" is NOT meant to imply that the applicant has a public health or safety emergency. The "emergency permit" is issued by the Board of Health to solve a "public health or safety threat". As defined under Chapter 131, Section 80A "A threat to human health or safety may include, but shall not be limited to:" the nine items listed in the law under sub-headings (a) through (i). Although this may become a simple determination once Boards of health become experienced with

such threats, DF&W has had four years of experience making such determinations. DF&W and MDPH have agreed to assist Boards of health upon request. MDPH has likewise had four years of experience in addressing these types of public health threats. During this four-year period, less than ten such incidents have been reported to MDPH. Such assistance may be as simple as a phone conversation with the DF&W District Office Biologist (see attached Directory). That office may have an existing file of the applicant's flooding complaint. Such a file could be used to make a determination not only of the applicant's complaint but also as to the best strategy to solve the problem (e.g., traps, breach or water flow device). DF&W has reported that it has been their experience, however, that a site visit is usually necessary to make a determination as to the cause of the problem as well as to design a strategy for solving the problem. DF&W has agreed to accompany the Board of Health on site visits when requested. It is also recommended that conditions at the site be appropriately documented (e.g., with photographs, videos, maps, drawings, etc.).

The list of nine (a through i) public health/safety threats may be difficult to apply to each situation. For example, the applicant may request a permit to trap beaver because of a threat to a septic system. Under the law, "(c) beaver or muskrat-caused flooding of sewage beds, septic systems or sewage pumping stations" may be cause to issue a permit. A site visit may reveal that the flooding is caused by a beaver, but that the water is quite a distance from the septic system and the real problem for the homeowner is a flooded lawn (or the smell of the wetland or the mosquitoes in the wetland). While the Board of Health could make a determination under sub-section (i) (4) that the flooding of residential land is a public health/safety threat, it may be prudent to deny the application and have the applicant work with DF&W using non-lethal strategies such as a water flow device. Therefore, if the Board of Health denied the permit, the applicant would apply to DF&W for a non-emergency permit to breach the dam and install a water flow device. Permission would still be needed by the Conservation Commission. The difference between the two outcomes has to do with the speed with which the applicant gets a permit and whether the applicant gets permission to use Conibear traps. If the Board of Health determines that a public health/safety threat exists, a ten-day emergency permit

can be issued that authorizes the use of Conibear traps. If a water flow device is to be installed in the dam or the dam is to be breached, the Board of Health sends the applicant to the Conservation Commission (i.e., that the Conservation Commission issues an Emergency Certification under the Wetlands Protection Act for the installation of the device). Conversely, if the Board of Health makes a determination that there is NOT a threat to public health/safety, the applicant can employ one of the following options for resolving their problem: 1) appeal to MDPH for a determination as to the existence to the threat; 2) appeal to DF&W if there is a question as to the cause (i.e., type of wildlife) of the threat; 3) contact DF&W for assistance with solutions covered under the non-health or safety threat section of the law (last three paragraphs of M.G.L. c. 131, s. 80A; or 4) contact a private contractor or non-governmental organization for assistance. Conservation Commission approval is still necessary for breaching a dam or installing a water flow device. If a Board of Health or MDPH determines that no threat exists, the Conservation Commission should not use the emergency certification mechanism but use its normal permitting process to address the activity.

The law provides that the Department of Environmental Protection (MDEP) shall make any determination of a threat to a public water supply. MDEP has issued a "Standard Operating Procedure" for such determination. In these cases the MDEP should notify the MDPH, Bureau of Environmental Health Assessment.

#### **How Does The Board of Health Interact With The Conservation Commission?**

Once a determination has been made by the Board of Health that an applicant has a public health or safety threat, the Board of Health shall issue an emergency permit to: 1) trap beaver and/or 2) breach beaver dams (and install water flow devices as above). The Board of Health has sole authority over permitting trapping, but joint authority with the Conservation Commission over the breaching of beaver dams.

The Legislature recognized that Conservation Commissions have an important role to play in solving beaver and muskrat problems, and specifically declared that breaching

and other water management proposals are subject to "determinations and conditions" of Conservation Commissions pursuant to the Wetlands Protection Act (M.G.L. c.131, s.40). MDEP has recently developed a similar Guidance Document to all Conservation Commissions. On page four of that document, MDEP outlines a "Recommended Process" for the issuance of breach permits. Emergency Certifications may be issued by the Conservation Commission for up to 30 days to allow for the breaching of beaver dams or the installation of water flow devices. MDEP recommends that the Emergency Certification be issued to overlap the ten-day Board of Health permit. No matter what process is used, it is essential that the Conservation Commission approve modifications to beaver dams prior to such work.

### **Types of Permits for Health and Safety Threats**

There are two types of permits for health and safety threats-- emergency permits issued by Boards of Health and extension permits issued by DFW. Emergency permits may be subdivided into initial permits and additional permits.

#### **Initial Emergency Permit**

If the Board of Health determines that a threat to human health and safety exists, the Board may authorize a ten-day emergency permit to applicants or their duly authorized agents that authorizes the applicant to take the following actions: 1) trap beaver or muskrat using Conibear-type traps, or cage or box type traps (subject to DFW regulations), 2) breaching of dams, dikes, bogs or berms (subject to approval and conditions of the Conservation Commission), and 3) use of any water-flow device or control structure (subject to approval and conditions of the Conservation Commission).

#### **Discussion of Remedies Allowed by the Emergency Permit**

1. Conibear-type Trap: upon determination that a public health or safety threat exists, the Board of Health has the authority to issue the ten-day emergency permit to the

applicant or his/her duly authorized agent to use Conibear-type body-gripping traps. These traps are restricted under the law and can only be used with a valid permit. Licensed trappers and Problem Animal Control agents have received training to use Conibear-type traps. DFW regulations also restrict the setting and placing of such traps. For example, Conibear-type traps can only be used underwater for the capture of beaver or muskrat. It is recommended that Boards of Health advise the applicant that during the period from June 1 through July 15, the kits are completely dependent on their mother. Beaver kits are born at the end of May and the beginning of June. Removal of the adults at this time may orphan beaver at an age when their survival may be jeopardized. In the case of public health and safety threats, the Board of Health does have the authority to issue emergency permits at this time.

2. Breaching: beaver dams are protected by law and cannot be breached without a permit. The Board of Health has the authority to issue the ten-day emergency permit to breach a beaver dam (and similar structures), subject to the conditions of the Conservation Commission. The permittee or his/her duly authorized agent has the responsibility to obtain the permission of the landowner where the beaver dam is located. The Board of Health emergency permit does not authorize the permittee to trespass on private property.

Water may be lowered from a site by breaching or removing a beaver dam. If beavers are not residing at the complaint site, this action can provide a long-term solution. Breaching a dam is usually only a temporary solution when beaver are occupying the site since they will repair the breach or rebuild the dam, thus re-flooding the site. The Conservation Commission will issue conditions for the breach to ensure that both upstream and downstream impacts to people, property and habitat are minimized. The Conservation Commission should advise the applicant that if a dam is breached during the winter months, the entrance to the beaver lodge might be exposed to the elements. Such exposure may jeopardize the survival of the beavers inside the lodge. Environmental conditions are such (i.e., snow and ice hinders establishment of new lodges or establishment of winter food caches) that beavers cannot relocate to a new area after



October 1 and before April 1. Limited breaches based upon Conservation Commission conditions may be warranted at this time.

3. Installation of Water Flow Devices: Boards of Health may issue emergency permits to breach beaver dams (or similar structures) for the purpose of installing water flow devices. Such permits are subject to Conservation Commission conditions. These devices can provide long-term solutions to beaver flooding problems provided that appropriate environmental conditions exist. Such devices do not work well in flat or shallow wetlands. The guidance above relative to breaching should also pertain to the installation of flow devices.

#### **Permitting Process for Extension Permits**

If the Board of Health has issued the initial ten-day emergency permit, and the threat to human health and safety has not been alleviated within the ten days, the applicant or his duly authorized agent, in conjunction with the Board of Health, shall apply to DFW for a 30-day extension permit. This permit allows all three remedies specified above, subject to determinations and conditions of the Conservation Commission.

If the 30-day extension permit is granted, DFW shall develop, with the assistance of the applicant, his/her agent, the Board of Health, and the Conservation Commission, a plan to abate the beaver or muskrat problem using alternative, non-lethal management techniques in combination with water flow devices, subject to Conservation Commission determinations and conditions. The plan may include cage or box type traps, if necessary.

#### **Permitting Process for Additional Emergency Permits**

Depending on the scenario, an applicant may obtain additional ten-day emergency permits, as follows.

Procedure 1: if the applicant has applied for and is awaiting, approval from DFW for the 30-day extension permit, the Board of Health may issue an additional ten-day emergency permit for all three remedies (see above). If, after such additional permit has expired, the applicant has still not received approval for the 30-day extension permit, the Board may issue a second ten-day additional permit. Such second additional emergency permit shall not allow the use of Conibear-type traps. In other words, an applicant is limited to two additional 10-day emergency permits under this procedure.

Procedure 2: the applicant applied for and received the initial ten-day emergency permit, and seemingly solved the problem within nine or less days (i.e., did not apply for the 30-day extension permit). However, the problem then recurs. He/she may then apply to the Board for an additional ten-day emergency permit. The applicant must state in writing that there exists on his/her property an animal problem which poses a threat to human health and safety, and which cannot be reasonably abated by the use of alternative non-lethal measures or cage or box traps, and that the applicant has tried to abate the problem using such alternative measures or cage or box traps.

Procedure 3: the applicant has applied for and received the initial ten-day emergency permit, has applied for and received the 30-day extension permit, and may have received one or two additional emergency permits under procedure one. The applicant appears to have trapped all beaver using the initial emergency permit, and is utilizing the extension permit to implement dam breaches or water flow device installation. The beaver problem then recurs. The applicant may then apply to the Board for an additional ten-day emergency permit. The applicant must state in writing that there exists on his/her property an animal problem which poses a threat to human health and safety, and which cannot be reasonably abated by the use of alternative non-lethal measures or cage or box traps, and that the applicant has tried to abate the problem using such alternative measures or cage or box traps.

Procedure 4: the applicant has applied for and received the initial ten-day emergency permit and has applied for the 30-day extension permit. While awaiting approval for the

30-day extension permit, the applicant has applied for and received one or two additional emergency permits. The 30-day extension permit is granted. The applicant appears to have trapped all beaver using the initial and additional emergency permits, and is utilizing the extension permit to implement dam breaches or water flow device installation. The beaver problem then recurs. The applicant may then apply to the Board for an additional ten-day emergency permit. The applicant must state in writing that there exists on his/her property an animal problem which poses a threat to human health and safety, and which cannot be reasonably abated by the use of alternative non-lethal measures or cage or box traps, and that the applicant has tried to abate the problem using such alternative measures or cage or box traps.

### **Denials and Appeals**

The applicant has the right to appeal a Board of Health decision to deny a permit to either DPH or DFW. DPH and DFW have agreed to the following appeal process. DPH will determine appeals if the reason for appeal is related to threats to human health or safety as set forth in (a) through (i) in §80A, and DFW will determine appeals if the reason for appeal is related to the type of wildlife causing the problem.

### **Reporting**

Boards of Health should send a copy of each permit (mailed on a monthly basis) to the Assistant Commissioner for Environmental Health, Department of Public Health, 250 Washington Street, Boston, MA 02108-4619.

TOWN OF AMHERST, MASSACHUSETTS  
DRAFT WATER USE RESTRICTION ORDINANCE

Section 1      Authority

This ordinance is adopted by the Town of Amherst under its police powers to protect public health and welfare and its powers under M.G.L. c.40, §§21 et seq. and implements the Town's authority to regulate water use pursuant to M.G.L. c. 41, §69B. This ordinance also implements the Town's authority under M.G.L. c. 40 §41A, conditioned upon a declaration of water supply emergency issued by the Massachusetts Department of Environmental Protection.

Section 2      Purpose

The purpose of this ordinance is to protect, preserve, and maintain the public health, safety, and welfare whenever there is in force a State of Water Supply Conservation or State of Water Supply Emergency by providing for enforcement of any duly imposed restrictions, requirements, provisions, or conditions imposed by the Town or by the Massachusetts Department of Environmental Protection.

Section 3      Definitions

Person shall mean any individual, corporation trust, partnership or association, or other entity.

State of Water Supply Emergency shall mean a State of Water Supply Emergency declared by the Massachusetts Department of Environmental Protection under M.G.L. c. 21G, §15-17.

State of Water Supply Conservation shall mean a State of Water Supply Conservation declared by the Town pursuant to Section 4 of this ordinance.

Water Users or Water Consumers shall mean all public and private users of the Town's public water system, irrespective of any person's responsibility for billing purposes for water used at any particular facility.

Section 4      Declaration of a State of Water Supply Conservation

The Town, through its Board of Water Commissioners, may declare a State of Water Supply Conservation upon a determination by a majority vote of the Board that a shortage of water exists and conservation measures are appropriate to ensure an adequate supply of water to all water consumers. Public notice of a State of Water Supply Conservation shall be given under Section 6 of this ordinance before it may be enforced.

approved or issued by the Department intended to bring about an end to the State of Emergency.

#### Section 9 Penalties

Any person violating this ordinance shall be liable to the Town in the amount of \$50.00 for the first violation and \$100.00 for each subsequent violation, which shall inure to the Town for such uses as the Board of Water Commissioners may direct. Fines shall be recovered by indictment, or on complaint before the District Court, or by non-criminal disposition in accordance with section 21D of chapter 40 of the general laws. Each day of violation shall constitute a separate offense.

#### Section 10 Severability

The invalidity of any portion or provision of this ordinance shall not invalidate any other portion or provision thereof.

**TOWN OF AMHERST HANDBOOK**

**FOR**

**WATER SUPPLY EMERGENCIES**

**for**

**Atkins Reservoir, Pelham Reservoir System, and  
Lawrence Swamp Wellhead Protection Area**

**JANUARY 2005**

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## INTRODUCTION

The management of a water supply utility is a complex operation that requires careful planning of procedures not only for daily activities but also for maintaining a good quality and quantity of water during emergencies. All public water supply functions are directed towards guaranteeing an uninterrupted supply of quality water to consumers. As such, an emergency response contingency plan is a vital component for an effective and safe water supply operation.

The purpose of this document is to provide the Amherst Water Department with an outline for action in the event of a water emergency, either short-term or long-term at the Atkins Reservoir, Pelham Reservoir System, and Lawrence Swamp Wellhead Protection Area. The outcome of the action plan in either case will provide potable water from a reliable source in sufficient quantity to supply the water users of the system until a permanent repair or solution is developed.

## TOWN OF AMHERST WATER SYSTEM OVERVIEW

The Town of Amherst (PWS ID# 1008000) is supplied with water from multiple sources, including two surface water reservoir systems and five groundwater sources. The Atkins Reservoir (01S) is located in Shutesbury and has a water surface area of 51 acres and a storage capacity of 200 million gallons at its maximum water elevation of 446 feet (USGS). The reservoir has an estimated safe yield of 1.2 million gallons per day (mgd).

The other surface water supply source for the Town is the Pelham Reservoir System, comprised of the Hill Reservoir, the Hawley Reservoir, and the intake reservoir (collectively designated as 02S). The combined reservoir system has a total water surface area of 14.3 acres and a total storage capacity of 46 million gallons. The reservoir system has an estimated safe yield of 0.9 mgd.

The five groundwater sources are located in the Lawrence Swamp Wellhead Protection Area. The Brown Well (02G – a.k.a. Well #3) is located in Belchertown. The South Amherst Wells #1 and #2 (01G and 04G) are located on the eastern edge of the aquifer in the southeastern portion of the Town. The Baby Carriage Brook Well (05G – a.k.a. Well #4) is located in the center of the aquifer in the southern portion of Town. And Well #5 is located in the aquifer just north of Bay Road.

These seven sources have a total MADEP approved safe yield of 6.9 mgd. The Atkins Reservoir, Pelham Reservoir System, and Brown Well (Well No. 3) supply approximately 80% of the Town's annual demand. The other wells are used as demand or as required by system maintenance activities. Of the total system design the Atkins Reservoir supplies approximately 28%; the Pelham Reservoir supplies approximately 26%; and the five wells within the Lawrence Swamp Wellhead Protection Area supplies the remaining 46%.



## **THREATS TO THE ATKINS RESERVOIR WATER SUPPLY**

There are few threats to the Atkins Reservoir; it lies in a relatively isolated area of the Town of Shutesbury.

In addition to risks, which are posed by current land use, it is possible to incur a water supply emergency due to physical disruption of the system or drought.

- Physical disruption - Any sort of catastrophic incident that impairs the ability of the system to pump or distribute water could be cause to declare an emergency. This could be a break or rupture of the water distribution pipes, or a malfunction of treatment or pumping equipment.
- Drought - Seasonal or long-term fluctuations in precipitation might cause a drop in the water table sufficient to reduce the yield of the well.

## **THREATS TO THE PELHAM RESERVOIR SYSTEM WATER SUPPLY**

There are few threats to the Pelham Reservoir System; it lies in a relatively isolated area of the Town of Pelham.

In addition to risks, which are posed by current land use, it is possible to incur a water supply emergency due to physical disruption of the system or drought.

- Physical disruption - Any sort of catastrophic incident that impairs the ability of the system to pump or distribute water could be cause to declare an emergency. This could be a break or rupture of the water distribution pipes, or a malfunction of treatment or pumping equipment.
- Drought - Seasonal or long-term fluctuations in precipitation might cause a drop in the water table sufficient to reduce the yield of the well.
- Wildlife activity - One of the highest risks in the Pelham Reservoir System is beaver activity, which has historically been problematic in this system. Additionally, gulls, geese, and other birds, dogs, horses, muskrat, and deer can be carriers of waterborne diseases such as *Giardia*, *Cryptosporidium*, and *Salmonella*.

## **THREATS TO THE LAWRENCE SWAMP WELLHEAD PROTECTION AREA WATER SUPPLY**

There are few threats to the Lawrence Swamp Wellhead Protection Area; it lies in relatively isolated and well-protected areas of the Towns of Amherst and Belchertown.

In addition to risks, which are posed by current land use, it is possible to incur a water supply emergency due to physical disruption of the system or drought.

- Physical disruption - Any sort of catastrophic incident that impairs the ability of the system to pump or distribute water could be cause to declare an emergency. This could be a break or rupture of the water distribution pipes, or a malfunction of treatment or pumping equipment.
- Drought – Seasonal or long-term fluctuations in precipitation might cause a drop in the water table sufficient to reduce the yield of the well.
- Recreational use of the area – The Norwottuck Rail Trail, a multi-use path, runs along an abandoned rail bed. This trail is in close proximity to water supply wells 1 and 2. The Robert Frost and Metacomet & Monadnock Trails, used for hiking, mountain biking, and horseback riding, traverse the Zone II.
- Future residential development
- Wildlife Activity – Beaver activity may flood wellheads and excessive animal activity may result in impacts to groundwater supplies. However, currently there are no known beaver issues affecting the wells in the Lawrence Swamp Wellhead Protection Area.

In this document, emergency situations are differentiated according to the following criteria:

Level I      Routine Problems

These incidents are minor disruptions to the water system that affect 10% or less of the system and are anticipated to be repaired/resolved within 24 hours or less.

Examples: Water main breaks and mechanical problems at pumping stations and/or wells.

Level II      Alert/Minor Emergencies

These incidents are more significant disruptions to the water system that affect 50% or less of the system and are anticipated to be repaired/resolved within 72 hours or less.

Examples: Local total coliform bacteria detection, major main breaks, multiple main breaks, major mechanical problems at pumping stations/treatment facility, or failure of chemical feed systems.

Level III      Major Emergencies

These incidents are very significant disruptions to the water system that affect more than 50% of the system and/or are anticipated to require more than 72 hours to be repaired/resolved. Major emergencies may require a Declaration of Water Supply Emergency and/or a Boil Water Order, Do Not Drink Order or Do Not Use Order

Examples: Break in major transmission main, loss or failure of treatment facility, loss of source (dam break, water supply shortage, contamination, etc.), loss of pressure in system, widespread total coliform bacteria outbreak, fecal coliform or E. Coli detection, or acts of vandalism.

Level IV      Natural Disasters

These incidents are generally caused by a widespread meteorological or geological event that disrupts the water system affecting more than 50% of the system and/or requiring more than one week for recovery of services. Such events may cause structural damage to a treatment facility or contaminate a source with untreated sewage, toxic chemical, or radioactive material. A

Declaration of Water Supply Emergency and/or a Boil Water Order, Do Not Drink Order or Do Not Use Order are likely to be required.

Examples: Hurricanes, tornadoes, earthquakes, or floods.

#### Level V

##### Nuclear Disasters/Terrorist Acts

These incidents involve large and uncontrolled releases of radioactive material or compounds into the environment/water supply source or deliberate acts that impair a water system (i.e. terrorism). In the case of nuclear disaster, surface water supplies within a 50-mile radius of a nuclear power plant experiencing such a release may be immediately contaminated. Groundwater supplies may remain safe for a period of time. A Declaration of Water Supply Emergency and/or a Do Not Drink Order or Do Not Use Order are likely to be required.

Examples: Nuclear power plant release to the environment or deliberate release of highly toxic materials to a water supply.

## DEFINITIONS

For the purposes of this document, the following definitions apply:

Emergency Response Plan	A written plan establishing operating procedures for handling water supply Plan emergencies. The plan shall include provisions for emergency water supply in the event of a sudden loss of existing sources, natural or man-made. It also shall specify who does what and when, using available resources, during emergency situations.
Emergency	A situation or event, natural or man-made, which causes or threatens to cause damage to a water supply system such that there will be a disruption of normal water supply functions. The effects can be on a portion or all of the system and may require an immediate action in order to protect public health.
Response	The actions taken during an emergency to minimize the impact of the emergency, protect the water supply, and return the water system to normal operating conditions.
Boil Water Order	Order issued under MGL c. 111, sec. 160 by the Department in accordance with Do Not Drink Order, DWS Policy 87-06, or Do Not Use Order.
Declaration of State	Order issued under MGL c. 21G, sec. 15, 16, and 17 by the Department in Of Water Supply accordance with DWS Policy 87-05. Emergency

## EMERGENCY RESPONSE PROCEDURES LEVEL I

Routine Problems      These incidents are minor disruptions to the water system that affect 10% or less of the system and are anticipated to be repaired/resolved within 24 hours or less.

Examples: water main breaks and mechanical problems at pumping stations.

### Initial Response:

1. Begin documentation log (Emergency Response Checklist – ATTACHMENT E) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the level of emergency.

### Response Procedures for Level I:

3. Activate emergency response team and respond in accordance with the Emergency Response Plan.
4. Maintain records of all activities throughout the incident. Retain records for future reference.
5. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

### Notes:

1. A MADEP staff member will review these reports during the next scheduled sanitary survey.
2. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, MADEP staff must be contacted within 24 hours of first knowledge of the violation.
3. If a coliform bacteria violation has occurred, a Coliform Violation Evaluation Survey (ATTACHMENT H) must be filed with the Western Regional office of MADEP.

## EMERGENCY RESPONSE PROCEDURES LEVEL II

Alert/Minor Emergencies These incidents are more significant disruptions to the water system that affect 50% or less of the system and are anticipated to be repaired/resolved within 72 hours or less.

Examples: Local total coliform bacteria detection, major main breaks, multiple main breaks, major mechanical problems at pumping stations/treatment facility, or failure of chemical feed systems.

### Initial Response:

1. Begin documentation log (Emergency Response Checklist – ATTACHMENT E) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the level of emergency.

### Response Procedures for Level II:

3. Activate emergency response team and respond in accordance with the Emergency Response Plan.
  4. Contact local responsible officials and authorities, including the DEP Regional Office, to inform them of conditions in the system and discuss any special actions that may be required. Such required actions may include, but are not limited to:
  5. Collection of special water quality samples related to the nature of the emergency.
  6. Collection of appropriate water quality samples at sites throughout the distribution system where problems have occurred. These samples must be taken both during and after the incident. If the problem is determined to be coliform bacteria related, follow the Coliform MCL Violation Determination flow chart contained in ATTACHMENT G.
- Provide notification to parties affected by the incident.
  - Provide an alternate source of water to those affected by the incident, if needed.
  - Contact local news media to inform them of incident, if needed.

- Provide Public Notification of any violations of DEP regulations, as needed.
- 7. Contact local responsible officials and authorities, including DEP Regional Office, to inform them of completion of repairs and results of all water quality testing.
- 8. Maintain records of all activities throughout the incident. Retain records for future reference.
- 9. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

Notes:

1. A MADEP staff member will review these reports during the next scheduled sanitary survey.
2. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, MADEP staff must be contacted within 24 hours of first knowledge of the violation.
3. If a coliform bacteria violation has occurred, a Coliform Violation Evaluation Survey (ATTACHMENT H) must be filed with the Western Regional office of MADEP.



## EMERGENCY RESPONSE PROCEDURES LEVEL III

Major Emergencies These incidents are very significant disruptions to the water system that affect more than 50% of the system and/or are anticipated to require more than 72 hours to be repaired/resolved. Major emergencies may require a Declaration of State of Water Supply Emergency and/or a Boil Water Order, Do Not Drink Order or Do Not Use Order.

Examples: Break in major transmission main, loss or failure of treatment facility, loss of source (dam break, water supply shortage, contamination, etc.), loss of pressure in system, widespread total coliform bacteria outbreak, fecal coliform or E. coli detection, or acts of vandalism.

### Initial Response:

1. Begin documentation log (Emergency Response Checklist – ATTACHMENT E) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the level of emergency.

### Response Procedures for Level III - Bacterial Contamination:

3. Initiate consultation with DEP and follow Public Notification requirements.
4. Activate emergency response team and respond in accordance with the Emergency Response Plan to collect samples and conduct preliminary analyses to determine potential contamination of the water supply. Use the data to follow the Coliform MCL Violation Determination flow chart contained in Attachment G.
5. Contact local responsible officials and authorities, including the DEP Regional Office, to inform them of conditions in the system and discuss any special actions that may be required. Such required actions may include, but are not limited to:
  - Collection of special water quality samples related to the nature of the emergency.
  - Collection of bacteria samples at sites throughout the distribution system where problems have occurred. These samples may be taken both during and after the incident. If the problem is determined to be coliform bacteria related, follow the Coliform

MCL Violation Determination flow chart contained in ATTACHMENT G.

- Provide notification to parties affected by the incident.
  - With DEP approval, provide an alternate source of water if needed. Alternative water sources should be identified in the Emergency Response Plan and may include bottled water, interconnections with other water systems, tanked water, etc.
  - Contact local news media to inform them of incident, if needed.
  - If DEP issues a Declaration of State of Water Supply Emergency, Boil Water Order, Do Not Drink Order or Do Not Use Order, follow necessary procedures.
6. Once problem is identified, initiate actions to resolve the problem.
  7. Contact local responsible officials and authorities, including DEP Regional Office, to inform them of completion of repairs and results of all water quality testing.
  8. Maintain records of all activities throughout the incident. Retain records for future reference.
  9. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

Response Procedures for Level III - Equipment/System Failure:

10. Activate emergency response team to evaluate the extent of the problem and determine the type and quantity of support needed to initiate corrective action.
11. Contact local responsible officials, including DEP Regional Office, to inform them of conditions in the system and discuss any special actions that may be required. Such required actions may include, but are not limited to:
  - Conduct preliminary water quality analyses to determine potential contamination of the water supply as a result of the system failure.
  - Provide notification to parties affected by the incident.
  - With DEP approval, provide an alternate source of water if needed. Alternative water sources should be identified in the Emergency Response Plan and may include bottled water, interconnections with other water systems, tanked water, etc.
  - Contact local news media to inform them of incident, if needed.

- If DEP issues a Declaration of State of Water Supply Emergency or Boil Water Order or Do not Drink Order, follow necessary procedures.
- 12. Once problem is identified, initiate actions to resolve the problem.
- 13. Contact local responsible officials and authorities, including DEP Regional Office, to inform them of completion of repairs and results of all water quality testing.
- 14. Maintain records of all activities throughout the incident. Retain records for future reference.
- 15. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

Notes:

1. A MADEP staff member will review these reports during the next scheduled sanitary survey.
2. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, MADEP staff must be contacted within 24 hours of first knowledge of the violation.
3. If a coliform bacteria violation has occurred, a Coliform Violation Evaluation Survey (ATTACHMENT H) must be filed with the Western Regional office of MADEP.

## EMERGENCY RESPONSE PROCEDURES LEVEL IV

### Natural Disasters

These incidents are generally caused by a widespread meteorological or geological event that disrupts the water system affecting more than 50% of the system and/or requiring more than one (1) week for recovery of services. Such events may cause structural damage to a treatment facility or contaminate a source with untreated sewage, toxic chemicals, or radioactive material. A Declaration of State of Water Supply Emergency and/or a Boil Water Order or Do Not Drink Order are likely to be required.

Examples: Hurricanes, tornadoes, earthquakes, or floods.

If the disruption of the system causes equipment failure and/or contamination caused by bacteriological activity, follow the emergency response procedures for Level III. If the contamination is caused by chemical compound(s), use the following procedure:

### Initial Response:

1. Begin documentation log (Emergency Response Checklist -- ATTACHMENT E) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the extent of impact on the water system. Collect water samples for analyses to determine if it is contaminated and the type of contamination.

### Response Procedures for Level IV - Chemical Contamination:

3. If possible, remove the affected water supply source or close the distribution system until it can be fully evaluated for contamination.
4. Contact DEP Regional Office for further instructions.
5. Inform proper local and state authorities/agencies, activate response team immediately and respond in accordance with the Emergency Response Plan. The responsible authority or authorities will issue the necessary "Orders". See ATTACHMENT D - Procedures Involving Outside Agencies and Personnel.

6. Inform the public through the local/regional electronic media about the emergency, affected area, and alternative water supply. Keep the public informed about new developments through "special reports and public service news".
7. With DEP approval, activate alternative water supply such as bottled water, interconnections with other water systems, tanked water, etc.
8. Evaluate the situation to brief the authorities and inform the public. If necessary, take other precautionary measures to safeguard public health.
9. Collect new samples for analyses and put in place a monitoring system to ensure a safe water quality.
10. Maintain records of all activities throughout the incident. Retain records for future reference.
11. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.
12. Complete the checklist and attach the necessary forms/memoranda. Send to DEP Regional Office two copies of the completed checklist and all attachments. It will not be necessary to send this specific emergency information to DEP if some other process will provide the necessary reporting (i.e. Emergency Declaration Procedure).

Notes:

1. A MADEP staff member will review these reports during the next scheduled sanitary survey.
2. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, MADEP staff must be contacted within 24 hours of first knowledge of the violation.
3. If a coliform bacteria violation has occurred, a Coliform Violation Evaluation Survey (ATTACHMENT H) must be filed with the Western Regional office of MADEP.

## EMERGENCY RESPONSE PROCEDURES LEVEL V

Nuclear Disasters/  
Major Terrorist Acts These incidents involve large and uncontrolled releases of radioactive material or compounds into the environment/water supply source or deliberate acts that impair a water system (i.e. terrorism). In the case of a nuclear disaster, surface water supplies within a 50-mile radius of a nuclear power plant experiencing such a release may be immediately contaminated. Groundwater supplies may remain safe for a period of time. A Declaration of Water Supply Emergency and/or a Do Not Drink Order are likely to be required.

Examples: Nuclear power plant release to the environment or deliberate release of highly toxic materials to a water supply.

### Initial Response:

1. Begin documentation log (Emergency Response Checklist – ATTACHMENT E) at first report of the problem.
2. Investigate problem and evaluate the situation to determine the extent of impact on the water system. Collect water samples for analyses to determine if it is contaminated and the type of contamination.

### Response Procedures for Level V:

3. If possible, remove the affected water supply source or close the distribution system until it can be fully evaluated for contamination.
4. Be prepared to follow the directives issued by the Massachusetts Emergency Management Agency on the Emergency Broadcast network; and provide the necessary assistance to this agency. At a minimum, the directives will advise the public:
  - Not to use surface or ground water until the source is analyzed and approved to be safe for human or animal consumption.
  - Limit the ingestion of water stored in closed containers or bottled water until after it has been tested and approved for consumption.
5. DEP and/or the Department of Public Health will provide technical assistance and provide information on testing water sources to ensure that they are safe for consumption.

6. Maintain records of all activities throughout the incident. Retain records for future reference.
7. Monitor resolution of the emergency and take appropriate action if the level of the emergency changes.

Notes:

1. All threats against a water system must be reported to the State Police and Federal Bureau of Investigation immediately.
2. A MADEP staff member will review these reports during the next scheduled sanitary survey.
3. Terrorist acts found to be minor in nature may be reduced to a lower level and follow the appropriate emergency response procedures.
4. If a violation requiring a Tier 1 Public Notice in accordance with 310 CMR 22.16 occurs, MADEP staff must be contacted within 24 hours of first knowledge of the violation.
5. If a coliform bacteria violation has occurred, a Coliform Violation Evaluation Survey (ATTACHMENT H) must be filed with the Western Regional office of MADEP.

# ATTACHMENT A LOCAL AUTHORITIES AND DEPARTMENTS EMERGENCY TELEPHONE NUMBERS

(Attach additional sheets if needed)

City/Town: Amherst

PWS Name: Amherst Water Department PWS ID #: 1008000

Atkins Reservoir, Pelham Reservoir System, Lawrence  
Swamp Wellhead Protection Area

Local Authorities:

Fire Department	<u>Keith Hoyle</u>	<u>Chief</u>	<u>413-256-4082</u>
	Name	Title	Telephone
Police Department	<u>Charles Scherpa</u>	<u>Chief</u>	<u>413-256-4011</u>
	Name	Title	Telephone
Health Department	<u>Eppi Bohdi</u>	<u>Health Director</u>	<u>413-256-4077</u>
	Name	Title	Telephone
Town Official(s)/ Elected Official(s)	<u>Anne Awad</u>	<u>Select Board Chair</u>	<u>413-253-4701</u>
	Name	Title	Telephone
	<u>Robie Hubley</u>	<u>Select Board ViceChair</u>	<u>413-256-4001</u>
	Name	Title	Telephone
	<u>Barry Del Castillo</u>	<u>Town Manager</u>	<u>413-256-4004</u>
	Name	Title	Telephone

Water Supply Responsible Authorities:

w - work telephone

h - home telephone

Superintendent	<u>Robert Pariseau</u>	w <u>413-256-4050</u>	h <u>413-253-3018</u>
	Name		
	<u>413-256-4054</u>	<u>pariseau@town.amherst.ma.us</u>	
	Fax	Email	
Assist. Superintendent	<u>Jeff Osborne</u>	w <u>413-427-3920</u>	h <u>413-253-5807</u>
	Name		
Primary Operator	<u>Steve Feltonic</u>	w <u>413-237-0658</u>	h <u>413-256-8298</u>
	Name		
Secondary Operator	<u>Tom Luippold</u>	w <u>413-773-3206</u>	h <u>413-773-3206</u>
	Name		

Local News Media:

Newspapers	<u>Amherst Bulletin</u>	<u>413-549-2000</u>
	Name	Telephone
	<u>Daily Hampshire Gazette</u>	<u>413-665-5000</u>
	Name	Telephone
Radio Stations	<u>WFCR</u>	<u>Amherst, MA</u>
	Name	Telephone
	<u>WHMP</u>	<u>Northampton, MA</u>
	Name	Telephone



Television Stations	<u>WWLP TV-22</u>	<u>Chicopee, MA</u>	<u>413-786-2200</u>
	Name		Telephone
	<u>WGGB TV-40</u>	<u>Springfield, MA</u>	<u>413-733-4040</u>
	Name		Telephone
Other Media	<u>AT&amp;T Broadband Cable Access Channel</u>		<u>413-734-3162</u>
	Name		Telephone

Other Emergency Contacts:

Special Users (i.e. Schools, Hospitals, Nursing Homes, Prisons, Others)

<u>University of Massachusetts</u>	<u>Campus Police, Amherst, MA</u>	<u>413-545-2121</u>
Name	Address	Telephone

Waterworks Contractors

<u>Warner Brothers Inc.</u>	<u>Sunderland, MA</u>	<u>413-665-4051</u>
Name	Address	Telephone
<u>Elm Electrical</u>	<u>Westfield, MA</u>	<u>413-568-0905</u>
Name	Address	Telephone

Hazardous/Toxic Waste Clean-up Contractors

<u>Clean Harbors Environmental</u>	<u>Boston, MA</u>	<u>617-269-5830</u>
Name	Address	Telephone
<u>Waste Stream Environmental</u>	<u>Holyoke, MA</u>	<u>413-534-0666</u>
Name	Address	Telephone

Replacement Equipment (Rental/Purchase) and Repair Parts Suppliers

<u>E.J Prescott</u>	<u>Springfield, MA</u>	<u>413-543-8888</u>
Name	Address	Telephone
<u>Tighe &amp; Bond</u>	<u>Westfield, MA</u>	<u>413-562-1600</u>
Name	Address	Telephone

**\*Include Area Code on All Telephone Numbers**

Please complete all items on this form, return two (2) copies to the DEP Boston Drinking Water Program Office with your Annual Statistical Report and keep a copy in an accessible location with the rest of your emergency response information. Please keep this information updated.

**ATTACHMENT A**  
**LOCAL AUTHORITIES AND DEPARTMENTS**  
**EMERGENCY TELEPHONE NUMBERS**  
(Attach additional sheets if needed)

City/Town: Amherst

PWS Name: Amherst Water Department PWS ID #: 1008000  
Atkins Reservoir, Pelham Reservoir System, Lawrence  
Swamp Wellhead Protection Area

Other Local Authorities (Belchertown):

Fire Department	<u>Edward Bock</u>	<u>Chief</u>	<u>413-323-7571</u>
	Name	Title	Telephone
Police Department	<u>Francis R. Fox, Jr.</u>	<u>Chief</u>	<u>413-323-6685</u>
	Name	Title	Telephone
Health Department	<u>Roger Bunsall</u>	<u>Health Chair</u>	<u>413-323-0406</u>
	Name	Title	Telephone
Town Official(s)/ Elected Official(s)	<u>Gerald Grasso</u>	<u>Select Board Chair</u>	<u>413-323-0403</u>
	Name	Title	Telephone
	<u>Michael Reardon</u>	<u>Select Board ViceChair</u>	<u>413-323-0403</u>
	Name	Title	Telephone
	<u>Gary Brougham</u>	<u>Town Administrator</u>	<u>413-323-0403</u>
	Name	Title	Telephone

Water Supply Responsible Authorities:

w - work telephone

h - home telephone

Superintendent	<u>Steve Williams</u>	w <u>413-323-0415</u>	h <u>413-323-5689</u>
	Name		

Other Local Authorities (Granby):

Fire Department	<u>Richard Gaj</u>	<u>Chief</u>	<u>413-467-9696</u>
	Name	Title	Telephone
Police Department	<u>Louis Barry</u>	<u>Chief</u>	<u>413-467-9222</u>
	Name	Title	Telephone
Health Department	<u>Richard Bombardier</u>	<u>Health Chair</u>	<u>413-467-7174</u>
	Name	Title	Telephone
Town Official(s)/ Elected Official(s)	<u>Wayne Tack, Sr.</u>	<u>Select Board Chair</u>	<u>413-467-7177</u>
	Name	Title	Telephone
	<u>Bryan Hauschild</u>	<u>Executive Asst.</u>	<u>413-467-3535 (h)</u>
	Name	Title	Telephone
Emergency Management Director	<u>Jeffrey McPherson</u>	c <u>413-374-1959</u>	
	Name		

Other Local Authorities (Leverett):

Fire Department	<u>John Moruzzi</u>	<u>Chief</u>	<u>413-548-9225</u>
	Name	Title	Telephone
Police Department	<u>Fred Bixby</u>	<u>Chief</u>	<u>413-548-4994</u>
	Name	Title	Telephone
Health Department	<u>Peter Daniell</u>	<u>Health Chair</u>	<u>413-548-1022</u>
	Name	Title	Telephone
Town Official(s)/ Elected Official(s)	<u>Fenna Lee Bonsignore</u>	<u>Select Board Chair</u>	<u>413-548-1022</u>
	Name	Title	Telephone
	<u>Marjorie McGinnia</u>	<u>Town Administrator</u>	<u>413-548-9699</u>
	Name	Title	Telephone

Other Local Authorities (Pelham):

Fire Department	<u>Kenneth Gav</u>	<u>Chief</u>	<u>413-253-3311</u>
	Name	Title	Telephone
Police Department	<u>Edward Fluery</u>	<u>Chief</u>	<u>413-253-3818</u>
	Name	Title	Telephone
Health Department	<u>Helen Cary</u>	<u>Health Chair</u>	<u>413-253-7129</u>
	Name	Title	Telephone
Town Official(s)/ Elected Official(s)	<u>Walter Oliveira</u>	<u>Select Board Chair</u>	<u>413-323-7129</u>
	Name	Title	Telephone

Other Local Authorities (Shutesbury):

Fire Department	<u>Walter Tibbets</u>	<u>Chief</u>	<u>413-259-1211</u>
	Name	Title	Telephone
Police Department	<u>Charles Bray</u>	<u>Chief</u>	<u>413-259-1279</u>
	Name	Title	Telephone
Health Department	<u>David Zarozinski</u>	<u>Health Officer</u>	<u>413-549-3710</u>
	Name	Title	Telephone
Town Official(s)/ Elected Official(s)	<u>Rebecca Turres</u>	<u>Select Board Chair</u>	<u>413-259-1214</u>
	Name	Title	Telephone
	<u>David Ames</u>	<u>Town Administrator</u>	<u>978-544-8441 (h)</u>
	Name	Title	Telephone

**ATTACHMENT B**  
**LIST OF STATE AND FEDERAL AGENCIES TELEPHONE NUMBERS**

State Agencies:

State Police.....(800) 525-5555\*\*

Department of Environmental Protection - Drinking Water Program Offices

    Boston.....(617) 292-5770\*

    Northeast Region (Boston).....(617) 654-6500\*

    Southeast Region (Lakeville).....(508) 946-2700\*

    Central Region (Worcester).....(508) 792-7650\*

    Western Region (Springfield).....(413) 784-1100\*

Department of Public Health.....(617) 624-6000\*

    Outside of Working Hours.....(617) 522-3700\*\*

Nuclear Incident Advisory Team.....(617) 727-9710\*\*

Massachusetts Emergency Management Agency.....(508) 820-2000\*\*

Federal Agencies:

EPA (Boston Office).....(617) 918-1111\*

National Response Center.....(800) 424-8802\*\*

Federal Emergency Management Agency.....(617) 223-9540\*\*

Occupational Safety & Health Administration.....(800) 321-6742\*

Communicable Disease Center (Atlanta, Georgia).....(800) 311-3435\*

Federal Aviation Administration (Accident Reporting).....(781) 238-7001\*\*

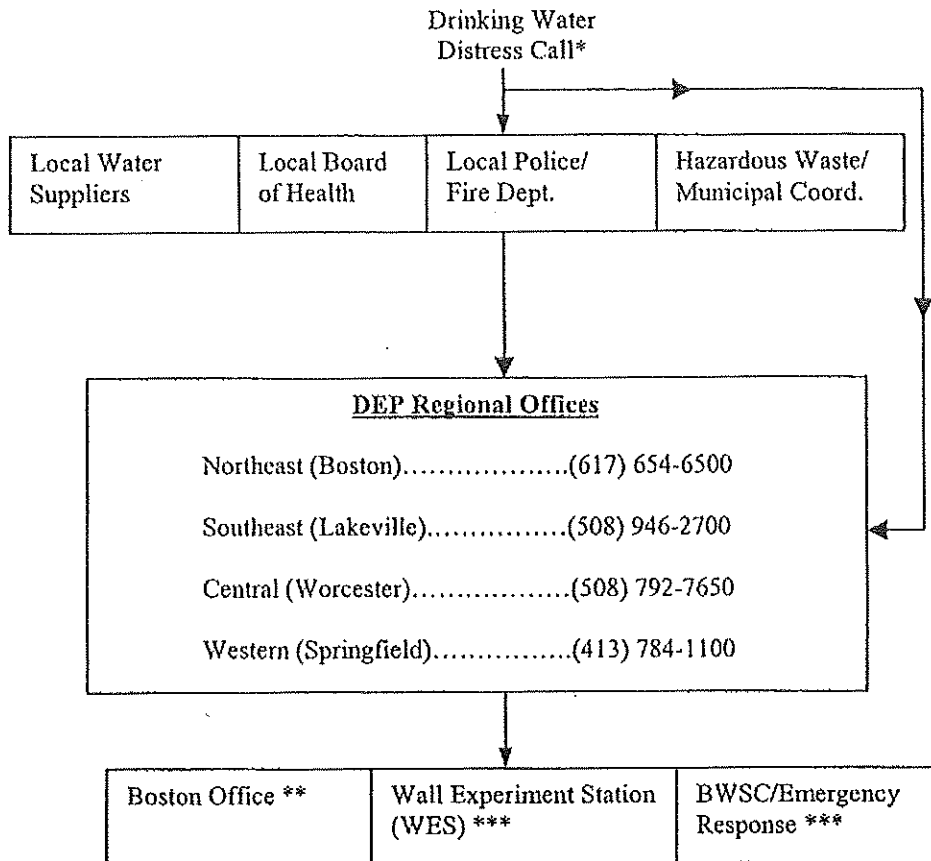
Federal Bureau of Investigation.....(617) 742-5533\*\*

\* Day Time  
\*\* 24 Hours

# ATTACHMENT C PROCEDURES FOR CONTACTING DEP

DEP may be contacted 24 hours/day, seven days per week by using the procedures in Section A of this ATTACHMENT during regular working hours or by using the procedures in Section B during all other hours.

## A. During Working Hours - Monday to Friday (9:00 AM to 5:00 PM):



\* All threats against a water system must be reported to the State Police and the Federal Bureau of Investigation immediately.

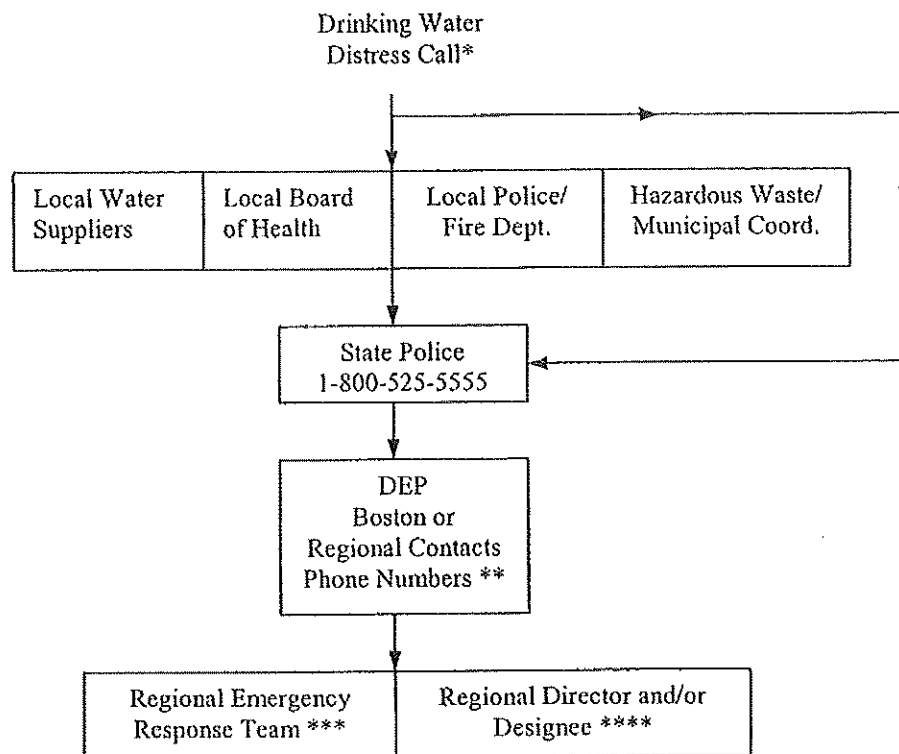
\*\* Calls made directly to the Boston Office will be referred to the appropriate regional office.

\*\*\* WES will only be contacted by the Regional or Divisional Director or their designee, if deemed necessary, and will give advice on the necessary chemical analysis to be taken and will also decide which analyses can be performed by WES.

\*\*\*\* The Bureau of Waste Site Cleanup (BWSC)/Emergency Response will be contacted whenever there is a release of oil and/or hazardous material. The Drinking Water Program will work with the BWSC/Emergency Response until the end of situation. Each Bureau should exchange copies of all reports written as a result of the situation (i.e. spill reports and water supply emergency data reports).

# ATTACHMENT C (continued)

## B. During Non-Working Hours - Monday to Friday (5:00 PM to 9:00 AM), Weekends and Holidays:



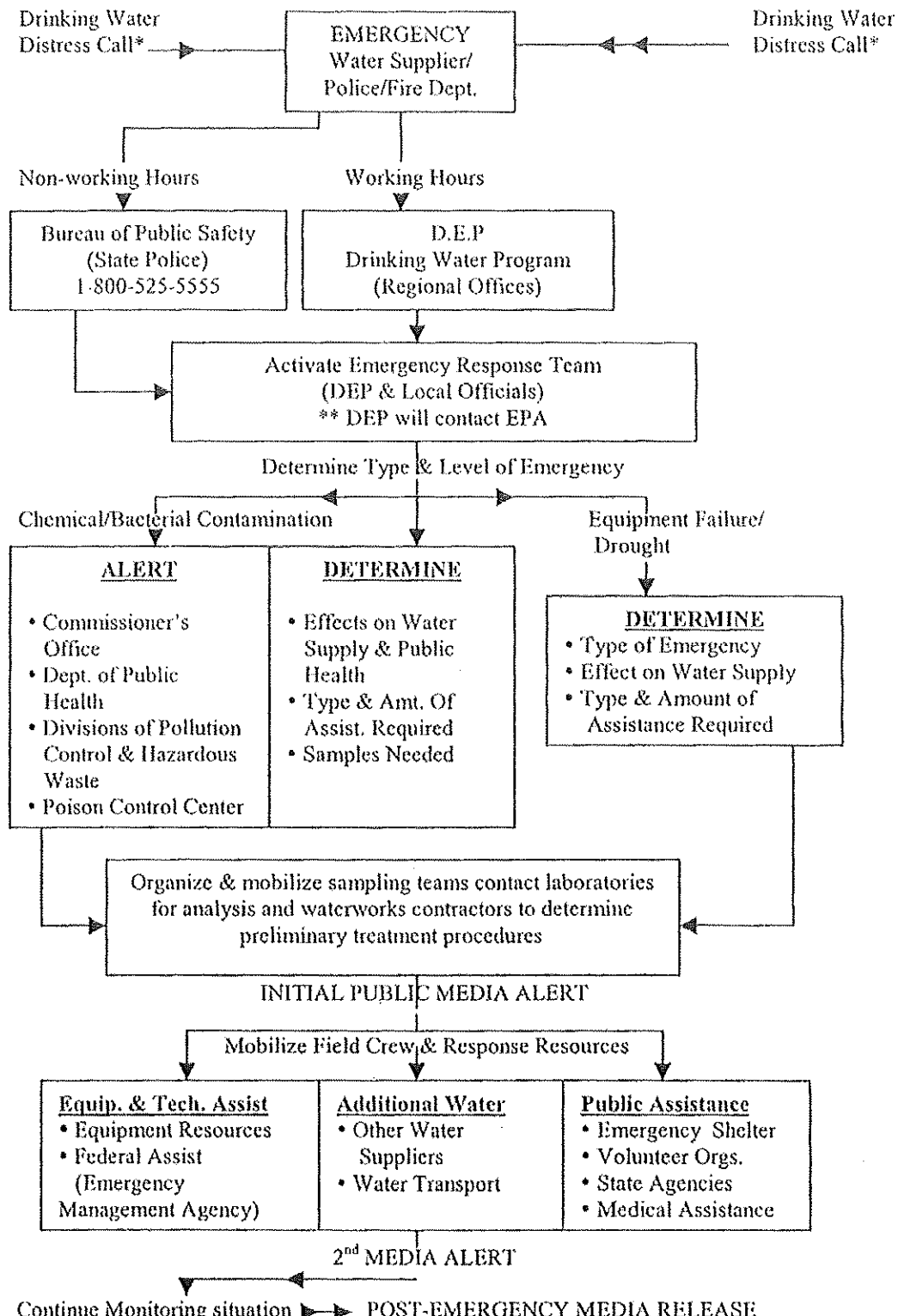
\* All threats against a water system must be reported to the State Police and the Federal Bureau of Investigation immediately.

\*\* The DEP – Emergency Line can only be contacted through the State Police.

\*\*\* The Regional Incident Response person may be able to handle the emergency without calling the Regional Director or his/her designee. Incident Response personnel are required to notify, by telephone, the regional Drinking Water Section Chief at the start, or within 24 hours, of the event (emergency) being reported and forward a copy of the Incident Report to the Drinking Water Program at the DEP Boston Office.

\*\*\*\* The Regional Director or his/her designee will define the scope of the problem, determine who should handle the emergency response, and determine who should be contacted (i.e. local Board of Health, etc.). The Regional Director or his/her designee will also have available a list, with addresses and telephone numbers, of experienced volunteer water supply engineers. This list will also be available to the Office of Incident Response. This list should be prioritized in order of experience. Services will be reimbursed, for any time spent outside of their normal working hours, according to the current union contract.

**APPENDIX D**  
**PROCEDURES INVOLVING OUTSIDE AGENCIES & PERSONNEL**



- Continue Monitoring situation → POST-EMERGENCY MEDIA RELEASE
- \* All threats against a water system must be reported to the State Police immediately.
- \*\* EPA will be responsible for contacting the Federal Agencies if the emergency is related to tampering with the water system.



ATTACHMENT E  
EMERGENCY RESPONSE CHECKLIST

City/Town: \_\_\_\_\_ PWS Name: \_\_\_\_\_ PWS ID #: \_\_\_\_\_

Complete a checklist for every emergency and, within thirty (30) days of a Level III or IV emergency, file an Emergency Report, attaching the checklist used during the Emergency Response. Send one (1) copy, with all additional forms and documents used according the Handbook for Water Supply Emergencies, to DEP Regional Office, addressed to Drinking Water Program (DWP). (If you already have a reporting form available please use it in lieu of the form below).

REPORT ALL EMERGENCIES

Name of Person Completing Form: \_\_\_\_\_ Title: \_\_\_\_\_

Date: \_\_\_\_\_ Time of Report: \_\_\_\_\_

Location of Emergency: \_\_\_\_\_  
Address / Line No. / Well No.

Emergency Caller Information (Circle): Male/Female Adult/Child

Name \_\_\_\_\_ Home Telephone \_\_\_\_\_  
Work Telephone \_\_\_\_\_

Address \_\_\_\_\_

If the emergency is a threat against a water system, collect the following:  
Voice: Normal Loud Whisper Calm Excited Nervous Other: \_\_\_\_\_  
Connection: Clear Other (could it have been a cell phone): \_\_\_\_\_  
Background Noise: Children Music Computer Television Radio Animals (type) \_\_\_\_\_  
Machinery (type) \_\_\_\_\_ Other: \_\_\_\_\_

Describe the problem/ emergency: \_\_\_\_\_ Time: \_\_\_\_\_

Determine Emergency Level (circle): I\* II\* III IV V

\*If Levels I or II, described the steps taken to handle the emergency.

If Level I or II, stop and file the report at this point.  
If Level III or greater, continue on next page.

ATTACHMENT E (continued for Level III or greater)

Which of the following actions were involved in the emergency? (Check appropriate actions)

☐ Motor vehicle accident:  
Vehicle type: \_\_\_\_\_ Make: \_\_\_\_\_  
Color: \_\_\_\_\_ Reg. \_\_\_\_\_ State: \_\_\_\_\_  
Owner (Name/Address): \_\_\_\_\_  
\_\_\_\_\_

☐ Accidental discharge:

☐ Illegal dumping/discharge:

☐ Chemical(s) involved:

Trade Name/ Common Name: \_\_\_\_\_  
(Circle) Solid / Liquid / Vapor Other: \_\_\_\_\_  
Placard / Label ID / DOT #: \_\_\_\_\_  
\_\_\_\_\_

☐ Disease outbreak, type of disease: \_\_\_\_\_

☐ Bacterial Problem, describe: \_\_\_\_\_  
\_\_\_\_\_

Nearest Public Drinking Water Source (surface/ground):

Name/address (location) \_\_\_\_\_  
Approximate distance from emergency location \_\_\_\_\_

Which of the following actions did you complete? (Check appropriate actions)

☐ Notify person(s) in charge of all emergencies:  
Name: \_\_\_\_\_ Home Telephone \_\_\_\_\_  
Work Telephone \_\_\_\_\_  
Initial Emergency Response: \_\_\_\_\_  
\_\_\_\_\_

☐ Close reservoir: \_\_\_\_\_ Wells Nos. \_\_\_\_\_  
Name of Reservoir

☐ Shutdown pump(s): \_\_\_\_\_  
No. or Name

☐ Shut off some of the distribution lines  
Specify (location, valve): \_\_\_\_\_

☐ Cross Connection Survey  
Results: \_\_\_\_\_

☐ Other (describe): \_\_\_\_\_  
\_\_\_\_\_

ATTACHMENT E (continued for Level III or greater)

☐ Local Authorities/Departments Contacted:

☐ Water Supply Superintendent/Assistant  
☐ Mayor/Officials  
☐ Police Department  
☐ Other: \_\_\_\_\_

☐ Certified Operator  
☐ Fire Department  
☐ Health Department

☐ Local/Regional News Media Contacted:

☐ Local Newspaper  
☐ Local TV Station  
☐ Other: \_\_\_\_\_

☐ Local Radio Station  
☐ Local Short-wave  
Radio Operator(s)

☐ State Authorities/Agencies Contacted:

☐ State Police / State Agencies (Emergency Line)  
☐ DEP (Emergency Line): ☐ Boston ☐ NERO ☐ SERO ☐ CERO ☐ WERO  
☐ DEP: ☐ Water Pollution Control ☐ Hazardous Waste  
☐ Department of Public Health  
☐ Massachusetts Emergency Management Agency (MEMA)  
☐ Other: \_\_\_\_\_

☐ Federal Authorities/Agencies Contacted:

☐ EPA - Boston Office (Emergency Line)  
☐ National Response Center  
☐ Coast Guard  
☐ Federal Emergency Management Agency (FEMA)  
☐ Federal Highway Administration  
☐ National Guard  
☐ Communicable Disease Center - Atlanta, GA  
☐ Other: \_\_\_\_\_

☐ Notify office staff about the problem/emergency to answer questions from the users;

☐ Brief the person(s) in charge of the emergency response and superiors about new developments;

☐ Prepare and attach a list of equipment and materials (specification/quantity) used in emergency response;

☐ Emergency report (checklist) completed; (Prepare and file the emergencies report for every single emergency situation.)

☐ Emergency report filed and one (1) copy submitted to DEP Regional Office - DWP.

☐ Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTACHMENT F  
GUIDELINES FOR PREPARING A NEWS RELEASE

YOURTOWN WATER DEPARTMENT  
123 Main Street  
Yourtown, YX 99999

Date of Issuance: Month, Day, Year

CONTACT: Contact's Name  
Work Telephone  
Home Telephone

FOR IMMEDIATE RELEASE

YOUR CITY OR TOWN, STATE - When preparing a news release, the questions: WHO? WHAT? WHEN? WHERE? And HOW? (when appropriate) should be answered in the lead paragraph. The lead paragraph should be kept as brief as possible, with no more than one or two sentences at most.

- The body of a news release should start about one-third of the way down the page. The news release should be typed or printed on one side of 8 1/2" x 11" sheets of paper.
- Use wide margins at the top and bottom of the page, and double-space your release so the copy can be edited, as appropriate.
- The source of information should be prominently displayed at the top of the release. In addition, the release should list the name, address and telephone number of the contact person in the upper left corner of the first page.
- A release date should appear in the upper right-hand section of the first page. Most releases should be "FOR IMMEDIATE RELEASE". Stipulate a date for release only when the news warrants holding it for a specific date or time.
- The text should be tightly edited. Keep your sentences and paragraphs short; use proper punctuation and grammar.
- End each sheet at the end of a paragraph. Use "more" at the bottom of the sheet if the release continues onto another sheet.
- Put a slugline in the upper left-hand corner of the second sheet and any additional sheets. Indicate the appropriate page number in the slugline.

Indicate the end of the release by placing one of the following symbols at the bottom of the last page of the news release:

###

30

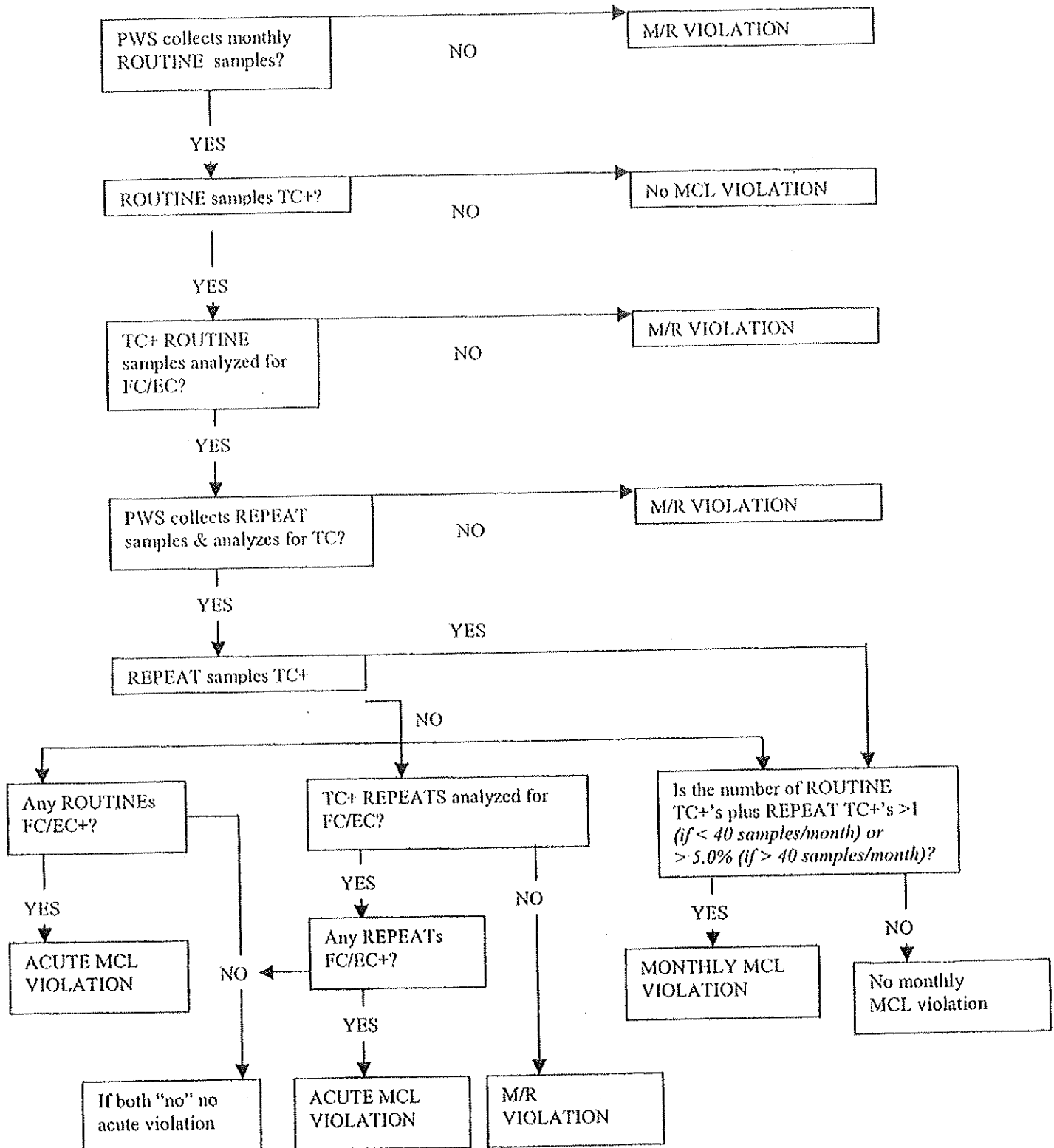
END

Proofread every word; double-check the copy with your source; let someone else proofread the finished copy for typos and grammar before distribution.

###

(Credit to Drinking Water Week Workbook published by New England Water Works Association)

**ATTACHMENT G**  
**VIOLATION DETERMINATION FOR THE TOTAL COLIFORM RULE**



Use this form to evaluate the cause of a coliform bacteria violation and to provide DEP with information on the cause of each coliform bacteria exceedence. This form must be completed by your certified operator and sent to the Drinking Water Program at your DEP Regional Office. This form will not be used for compliance or enforcement.

DATE DEP was notified:

Signature \_\_\_\_\_ Date \_\_\_\_\_

While the prospective saboteur and some of his methods may have changed, the awareness and concern about an intentional attack on the nation's critical infrastructure has only heightened since the demise of the Cold War. Not only has the number of terrorist-type groups grown but they are increasingly extreme. "Modern terrorist groups tend to be decentralized, and many self-declared terrorists work alone," writes Michael T. Osterholm in his book about the threat of bioterrorism, *Living Terrors* (Osterholm et al, 2000). Also, the information highway has joined the traditional critical infrastructure underpinnings of the nation: transportation, banking and finance, energy, telecommunications, emergency response systems, and water supply. In May 1998, then President Clinton issued Presidential Decision Directive 63 (PDD 63), and a supporting, unclassified White Paper that defined the administration's policy on protecting the nation's critical infrastructure. The White Paper states, in part, "As a result of advances in information technology and the necessity of improved efficiency.. [the nation's critical infrastructures] have become increasingly automated and interlinked. These same advances have created new vulnerabilities to equipment failures, human error ... and physical and cyber attacks." (National Security Council, 1998)

### What are the threats?

"Three attributes are crucial to water supply users. There must be adequate quantities of water on demand; it must be delivered at sufficient pressure; and it must be safe for use. Actions that affect any of these three factors can be debilitating for the infrastructure," states the water sector summary report crafted by the presidential commission tasked with presenting a case for increased security measures of the nation's infrastructure (President's Commission, 1997). A variety of methods could be used to undermine these three essential functions of a water supply system.

*Physical destruction.* Many observers believe that physical destruction of water system components or the disruption of a water supply is a much more likely scenario than a

contamination event. The loss of flow and pressure would not only cause problems for water cutomers, but drastically hinder firefighting efforts as well. Hoover identified eight potentially vulnerable points in a water utility in addition to "bacterial infection or other pollution of water," including damage to vital equipment by explosives, damage to interdependent infrastructure such as power stations, arson, and injury to personnel (Hoover, 1941). Explosives and guns are much easier to obtain than destructive quantities of contaminants, so the potential for conventional damage to be inflicted on a water supply is much higher than a contamination event. Damage of a physical nature includes disruption or destruction of:

- \* an operating or distribution system component
- \* the power source or other interdependent infrastructure, such as telecommunications
- \* water treatment chemical containers, particularly chlorine
- \* supervisory control and data acquisition (SCADA) systems.
- \* raw water reservoirs, aqueducts, and pumping stations.

Another concern is the potential for creating a system-wide water hammer effect by opening and closing major control valves too rapidly, resulting in a large number of simultaneous main breaks (President's Commission, 1997). This, and a loss of pressure that could affect firefighting capabilities, would not only jeopardize the water supply, but also tax the resources of utility staff and other public works personnel. As with any natural disaster that destroys utility facilities or threatens the delivery of safe water, the stress and overtime imposed on staff handling the situation is a factor that must be considered in the larger picture of preparedness and response.

Chlorine and other hazardous chemicals used in the treatment process also can be susceptible to attack, particularly during transport to the utility or at an unsecured plant site. Not only would the release of chlorine gas into a residential neighborhood be dangerous, but the interruption of the supply of chemicals to the treatment plant could undermine the disinfection process.



*Bioterrorism/Chemical Contamination.* As the subject of many conferences and workshops, as well as of fiction and nonfiction books and movies, bioterrorism is a buzzword that catches immediate attention. Technically, the term refers to massive contamination by a microbiological agent, but there is also concern about contamination by a toxic chemical, both of which, under certain circumstances, can be considered weapons of mass destruction (WMD). Major Donald C. Hickman, in a paper urging better protection of US Air Force water systems against deliberate contamination, cites the release of sewage into a Bohemian reservoir by Nazi agents, the dumping of animal carcasses and hazardous materials into the majority of Kosovo's wells, and the use of cherry laurel water, which contains cyanide, by Nero against his enemies in ancient Rome, to build his case (Hickman, 1999).

Generally, biological agents considered to be a WMD -- an agent capable of producing mass casualties and of being produced in mass quantities -- pose the most danger in aerosol form. Contamination would likely occur through the air in an interior space, such as the sarin attack in a Tokyo subway in 1995. In determining which chemical and biological agents that are most likely to be used in a terrorist attack, the FBI's main criteria are "high dermal or inhalation toxicity, common malicious use reported, and prior use by terrorists" (FBI, Feb. 1, 2001). Nelson P. Moyer, of the University Hygienic Laboratory, said, "The ideal waterborne agent of bioterrorism has a low infectious dose, produces severe gastrointestinal disease in a population with little or no immunity, and results in a higher percentage of systemic complications leading to death." (WQTC, Moyer, 2000)

While in the past, the Centers for Disease Control and Prevention (CDC) in Atlanta has focused on airborne routes, CDC is now focusing more research on the waterborne viability and resistance to disinfection of such agents of smallpox, anthrax, botulinum toxin, tularemia, and hemorrhagic fever viruses, which are Category A biological agents of high concern (CDC, 1999). Such research is not new, and other characteristics that are relevant to an agent's potential as a biological weapon include

the agent's stability in the drinking water system, virulence, culturability in the quantity required, and resistance to detection and identification processes (Berger et al, 1955). CDC is also stockpiling antidotes and vaccines, has established a disease surveillance network in hospitals and other health care facilities to detect and identify unusual unexplained illnesses, and is working with public and private laboratories to facilitate the detection and identification of biological agents in the event of a terrorist attack (Hughes, 1999).

In water systems, the commonly held belief that "dilution is the solution," along with the multiple barrier approach used to detect and eliminate or deter naturally occurring pathogens, would likely prevent the successful introduction of a toxic chemical or microbiological agent at the source or in the treatment plant (WQTC, DeLeon, 2000). Also, "the opportunities for finding unobserved sites for sabotage are few, as compared with the distribution system," (Berger et al, 1955) which is particularly vulnerable because of its unguarded accessibility and the widespread area it reaches.

*Backflow.* Consider the unintentional release of aqueous fire-fighting foam into the Charlotte Mecklenburg Utilities distribution system through a fire hydrant when a fire truck pump was turned on before a valve was closed. The pump feeding the foam produced more pressure than the water pressure in the system, and without a backflow prevention device stopping it, more than 60 gallons of foam got into the neighborhood's pipes and taps (Krouse, 2001). Almost every home and building on a public water system has unprotected access to the distribution system; one wacko who understands hydraulics and access to a drum of toxic chemicals could inflict serious damage to a water supply in a neighborhood or pressure zone without detection pretty quickly in most communities. Contaminants could also be introduced into a system in distribution reservoirs and through fire hydrants.

*Cyber attack.* The threat and reality of cyber attacks can affect the entire infrastructure network. Prof. James T. Lambert of the University of Virginia, in a presentation to the

participants of a US Environmental Protection Agency (USEPA) sponsored workshop, cited research showing that many water utility SCADA systems are susceptible to hacking, which could result in disclosure or theft of sensitive information, corruption of information, or, at the worst extreme, denial of service (USEPA/DOE Workshop: Lambert). Because many supervisory control and data acquisition (SCADA) systems are not connected to the Internet, the threat of a cyber attack is most likely to come from a disgruntled employee with access to the system.

### **Who poses a threat?**

While a "terrorist" threat is typically expected to be carried out by an organized group or nation with a cause or statement to make, the disenfranchised loner, e.g., Unabomber Ted Kaczynski or Oklahoma City bomber Timothy McVeigh, is a more likely menace. The intentional acts can usually be categorized into five classes of perpetrators:

1. Vandals, who commit crimes of opportunity, such as a spontaneous action without a provoking cause. Examples include teenagers who skinny dip in a water tank then dump into the reservoir the excess paint they've used to scrawl their class year on the outside of the tank.
2. The lone wolf, a disenfranchised, often mentally ill individual who may target his victims for their ethnicity, beliefs, or other supposed infractions.
3. Insiders, particularly employees, former employees, or contractors, who are seeking revenge or venting anger over some real or imagined slight. Because of their inside knowledge of an operation, these perpetrators could feasibly inflict the most serious harm.
4. Activist groups or cults, not aligned with a country, but intent on making a statement, such as the Earth Liberation Front that claimed responsibility for burning down the \$12 million Vail, Colo., ski lodge, or the Oregon cult that poisoned a salad bar and water system with salmonella.
5. State-sponsored terrorist groups, such as those linked to known enemies of the US.

A state-sponsored group was the alleged signatory of the threatening letter to water utilities on January 24; the concern of the parties that notified utilities about the threat was that the group actually had the financial and technical resources to carry out a major disruption of water supplies in 28 cities. Not many members of the other four classes of perpetrators have that sort of financial or manpower resources, but that does not mean they are not resourceful. In 1998, a group of teenagers carefully plotted a way to get into the water treatment plant in Neenah, Wis., where they intended to throw dry soap in the filters and liquid soap on the floors, place trip wires where plant personnel would be impeded, and videotape the entire action. These teens also had a cache of 77 pounds of M-80 firecrackers, lighter fluid, bolt cutters, and baseball bats that they said were to be used to defend themselves if necessary (Wettering, 1999).

#### **What is being done?**

PDD 63 established the National Infrastructure Protection Center (NIPC), and appointed the USEPA as lead federal agency on critical infrastructure protection issues for the water supply sector (National Security Council, 1998). USEPA subsequently appointed Diane VanDe Hei, executive director of the Association of Metropolitan Water Agencies (AMWA) as the water sector liaison to the federal government on critical infrastructure. USEPA is funding, in cooperation with the AWWA Research Foundation, a research project to develop a vulnerability assessment methodology. AMWA established a national Critical Infrastructure Protection Advisory Group (CIPAG), which began meeting in January 2001. Comprised of industry representatives, with technical support from water associations and federal agencies such as USEPA, FBI, and the Department of Energy, the CIPAG is providing guidance to a variety of activities, including:

- \* an Information Sharing and Assistance Center (ISAC) for the water supply sector, which would allow secure transmission of threat information and other sensitive data;

- \* guidance documents that will outline what steps to take to protect a facility against attack, respond to attack, and mitigate the consequences of an attack;
- \* cooperative meetings of all critical infrastructure sectors, through the US Chamber of Commerce and the Critical Infrastructure Assurance Office, a federal coordinating office;
- \* a national infrastructure assurance plan for the water sector; and
- \* training activities.

CIPAG Chair Brian Ramaley of Newport News (Va.) Public Utilities will provide an update and overview of the group's activities at a Sunday workshop during the 2001 AWWA Annual Conference and Exposition (ACE) in June. The workshop, "Critical Infrastructure Terrorism and Security," will provide participants with the first view of the USEPA/AWWARF-funded vulnerability assessment tool being developed by Sandia National Laboratory, as well as some practical advice from FBI agents, researchers, and utility professionals who already have a program in place to address terrorist issues.

A number of public and private institutions are conducting research on issues related to critical infrastructure protection and have established training programs that will take participants through the basics of identification, response, and remediation, although most programs are not water sector specific. AWWA is planning to develop a 2 -3 day "Seminar in a Box" program in 2002 that would explore in-depth the issues presented at the 2001 ACE workshop. This seminar would provide trainers and materials on a request basis to utilities, AWWA sections, and other qualified groups or agencies.

### **What are other concerns?**

One of the biggest issues that many water utility executives raise is the confidentiality of information, e.g., concerns that the public may have easy access to details of a vulnerability assessment under local and state Freedom of Information Act (FOIA) laws. The federal FOIA allows agencies to withhold information that "could reasonably be expected to endanger the life or physical safety of any individual," and "geological and geophysical information and data, including maps, concerning wells" (FOIA). Also at the federal level, most sensitive data would not be available, because utilities are not required to provide such information to USEPA or any other agency at this time. A water industry ISAC and the FBI/NIPC Infraguard program (see sidebar) may be the answer to some of these concerns. By limiting access to, and possibly encrypting information, only those with the proper access codes or passwords will be allowed read or browse specific data. The USEPA and AWWA are also working with the CIAO to assist municipal utilities in dealing with local and state FOIA laws. Utilities are advised, nevertheless, to have their attorneys review any plans to collect sensitive information, such as the results of vulnerability assessments, to ensure that the utility has a basis for withholding information under state and local laws.

### **What can utilities do?**

Utilities must take it upon themselves to assess their vulnerabilities and prioritize them for necessary security improvements. The AWWARF vulnerability assessment tool will provide templates to assist utilities in this process, and the tool may be distributed through the ISAC. The steps that can be taken once the vulnerabilities are identified are numerous (see sidebar), and need to include outreach to local and regional law enforcement and emergency management officials, as well as federal and state agencies that would be involved in a terrorist situation (see sidebar on who does what in federal and state agencies). These officials should be invited to tour the water utility facilities so they are aware of its features and vulnerable points and can respond appropriately if an attack occurs. That personal contact will also raise the water utility's visibility on the

radar screen of agencies, such as the local FBI field offices, that monitor terrorist activities, so they will think to notify the water utility in the event of a threat and to include utility staff in preparedness and emergency response training.

Most utilities have emergency preparedness plans that address redundancy of operations, public notification, chain of command, media response, emergency water supply, and other issues that need attention in a crisis. These plans should provide the backbone of a response strategy for a terrorist attack as well, but should be reviewed and updated to include a checklist or barometer (predetermined with input from local and federal law enforcement officials) to determine how serious the threat is and whether or not to

- \* monitor the situation and do nothing differently operationally,
- \* increase security,
- \* issue boil-water or do-not-drink alerts,
- \* change operations (e.g., slow filter rate, increase/decrease chemicals),
- \* cease operations, or
- \* take other steps.

Some utilities have checklists for their customer service staff, so if a threat comes in, the person manning the phone can help identify who and where the threat came from. The checklist includes questions about tone of voice, gender, whether or not the voice was disguised or muffled, and background noise. Again, law enforcement agencies can help in crafting or supplying such a checklist, and should be notified immediately if a threat is phoned in to a utility.

### **Aftermath**

News item from a California daily:

*"It had a look that is common to weekend vandalism: the cut screen, the mess in the building, the spilled material. But the building was the control room for Grass Valley's water treatment plant, and the*

*mysterious bright red substance was spilled into the Sierra foothill town's water supply over the weekend. ...*

*The plant will remain out of commission probably until early next week and the 2,300 residences and businesses will continue to receive 1.2 mgd from the Nevada Irrigation District." (Cox, 1999)*

The FBI alert that went out to utilities on Jan. 24, 2001, was initially sent to about 300 of the largest metropolitan suppliers. Smaller utilities, however, tend to be less protected and thus more vulnerable to attack, whether it be by teenage vandals or by state-sponsored terrorists. Every utility that has had to repaint a graffiti-riddled water tower or replace stolen signs around a reservoir has witnessed how vulnerable it is to outside intrusion. Consider those incidents and multiply them by a factor of evil intent to cause harm, and then consider just how safe your facility is from an deliberate act of aggression. For, as J. Edgar Hoover said (Hoover, 1941), "We must not be lulled into a false sense of security. The thrusts of the subversive agent must be met and thwarted at every turn. The methods of operation of the saboteur and the espionage agent are limited only by their ingenuity."



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